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JANUARY-FEBRUARY, 1959 VOL. 13 NO. 1

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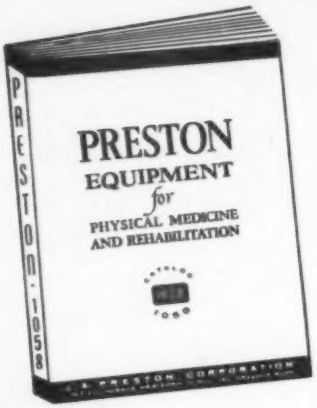

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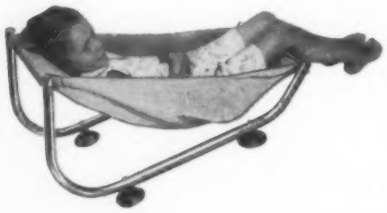

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THE JOURNAL OF THE ASSOCIATION FOR PHYSICAL AND MENTAL REHABILITATION

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Expansion of A Shrunken World—

A PSYCHOLOGICAL CONCEPT OF CORRECTIVE THERAPY IN A BRAIN-DAMAGED PATIENT*

WERNER M. MANDEL, M.D.**

Alteration in the time and space perception observed in the brain-damaged patient in the past has been attributed to central nervous system cellular dysfunction. In this report we are able to demonstrate the reversal of specific organic, perceptual and motor deficits in a brain-damaged patient without concomitant neurological changes.

The organic symptoms in our patient had been relentlessly progressive without evidence of improvement for at least six years. During his two years of hospitalization prior to the experimental treatment period, the patient's level of function continued to decline steadily. He was not affected by drug therapy.

The experimental treatment program which caused this reversal of organic deficits consisted of corrective therapy which is a form of treatment by prescribed physical exercise. The patient described in our study was a severely brain-damaged, incontinent, bedfast, 73-year-old male veteran. Both before and after the seven-month period of corrective therapy, we carefully assessed the patient's perception of time and space as well as his posture, movement, behavior and neurological status.

Before initiating treatment a sound movie was taken as a record of the patient sitting, getting up, standing, walking, talking, smoking and riding a stationary bicycle. He was asked to estimate distances before and after walking them. He was asked to walk and to ride a stationary bicycle for a specified number of minutes. It was requested that he estimate the distance from one town (significant in the patient's life history) to another. These observations were repeated three times on three consecutive days. A complete neurological and psychiatric examination was done, including an electroencephalogram. The ward doctor, nurse and aides recorded the patient's clinical condition and behavior descriptively prior to and during the period of treatment.

For the following seven months the patient was taken from his ward to the corrective therapy clinic for one hour each day. In the clinic he was led and assisted in exercises by a corrective therapist. These exercises consisted of walking between parallel bars, knee bending, stationary bicycle riding, weight lifting and grip strengthening activities. During the hour of corrective therapy the patient had the continuous attention of a single therapist, though during the seven months three different therapists participated in the treatment of the patient.

After completion of the seven-month period, the patient was again asked to make estimates of time and space. Another sound movie was taken repeating the recordings made in the first movie. A complete neurological and psychiatric evaluation was repeated, including electroencephalographic assessment and careful check of his vision and audition. The two movies were shown to a group of physical therapists, corrective therapists, and psychiatrists who were asked to comment on the patient's stance and motion.

During the seven-month period of corrective therapy, marked changes were observed in this patient's perception of time and space, in his stance and motion, as well as in his behavior and psychiatric impairment. No changes were found in his neurological deficit or his vision or hearing throughout the experimental period. As a result of corrective therapy the patient became oriented and continent.

The change in this patient's behavior was first noted during the daily one-hour period of corrective therapy in the clinic. During the first two months the patient's condition on the ward remained unchanged. In the corrective therapy clinic he rapidly gained self-confidence in performing his exercises. He became friendly, much less demanding and soon asked to go to the bathroom rather than be incontinent. His walking improved rapidly; he was able to sit by himself and, within a month after starting treatment, he was able to dress himself and to walk to the bathroom unaided as well as to care for his toilet needs. In the corrective therapy clinic he took great pride in his ability to do things for himself. Meanwhile, on the ward he was still incontinent, demanding, noisy, objectionable and messy. While sitting up he had to be tied to a chair to keep from injuring himself. Once a week in the corrective therapy clinic a party was given for the patients. The hostesses at these parties were Red Cross volunteers with whom the patient was pleasant, friendly and observed all the usual social niceties. He looked forward to these parties and soon remembered that Thursdays were party days. Yet, dur-

*From Winter Veterans Administration Hospital, Topeka, Kans.: VA Research Project No. 217.
**Chief Psychiatrist, After-Care Facility, Metropolitan State Hospital, Norwalk, Calif.

ing the same period when he was approached on the ward, he frequently shouted and made demands, and on occasion hit other patients who were seated next to him.

Not until three months after the treatment was initiated were the first changes in the patient's behavior observed on the ward. Throughout the experimental period the patient's ward behavior lagged considerably behind his level of function in the corrective therapy clinic. The patient's entire day seemed to revolve around the one-hour period in the corrective therapy clinic. After several months of treatment he was able to go to the bathroom by himself even on the ward. He could sit in the chair without falling, and no longer bumped himself or fell when walking on the ward. He became less hypercritical and less abusive toward the ward personnel and somewhat less noisy in his demands. He took a great deal of pride in his independence and seemed to gain considerable self-esteem from being able to do little things for himself, such as going to the bathroom, buttoning his trousers, finding the correct end of a cork tip cigarette to put in his mouth and walking unassisted about the ward. Actual physical fights with other patients stopped entirely. He was able to accept ward rules such as not being allowed to smoke in his bed and waiting his turn to have his bed made. He began to spend some time conversing with other patients and even became interested in participating in simple games and discussing politics. The attitude of the ward personnel toward the patient changed during the experimental period. Initially he had been thought of as a ward management problem, a rather noisy, messy, somewhat nasty old man. As a result of the experiment, the ward personnel became more interested in him; and, though skeptical, they were expectant in looking for change in his behavior. Perhaps as a result of this he was given more attention than he had been given previously.

A neurological examination at the end of the experimental seven months period revealed no change from the previous one. A repeat electroencephalogram again was irregular and disorganized. Audiometric examination revealed no change in the patient's hearing. An examination of the eyes again showed nearly total blindness.

In the corrective therapy clinic his physical ability was improved. Unassisted he was able to get out of and sit down in a chair; he was able to walk one thousand feet, to mount and ride a stationary bicycle at a fair pace for ten minutes, to do five deep knee bends, to touch his toes five times, to work on overhead pulleys and to lift ten-pound weights over his head ten times. In doing these things he gained considerable self-confidence.

The patient's attitude during treatment was characterized by these typical quotations: "It gets awful lonesome when you can't see and have no one to talk to. I couldn't do these things when I first came over here. I like to do things for myself. The reason I like to talk about history is that I know more about it. The reason I sometimes shout is because I don't know

Task	March 1956	October 1956
(1) Ride bicycle 3 minutes	5 min., 30 sec. 8 min., 20 sec. 11 min., 10 sec.	3 min., 10 sec. 3 min., 20 sec. 2 min., 40 sec.
(2) Walk 30 ft. and estimate how long it took (Actual time average—1 min., 20 sec.)	4 min. 3 min. 3 min.	1 min. 1 min. 1 min.
(3) How long between breakfast and dinner. (Actual time—4½ hrs.)	7 hours 6 hours 6 hours	3 hours 2 hours 3 hours
(4) How many hours in day?	24 24 12	24 24 24
(5) How many days in year?	360 360 360	360 360 360
(6) What year is it?	I don't know 1918 After the war.	1956 1956 1956
(7) What season is it?	Fall? I can't see out. I don't know.	Fall October Fall

TABLE I

Time Estimates

whether there's anybody around and I want them to come."

To understand more precisely the psychological aspects of the action-oriented corrective therapy in this case, we must remind ourselves that when the patient started the treatment he was almost entirely helpless. He could not sit unassisted, he was totally dependent on others for toilet care, he actually was unable to stand on his own two feet. The treatment program emphasized increasing motor activity in carefully graded steps and resulted in the patient's regaining freedom of movement and some measure of independence. He was able to walk by himself; he could sit, stand, and move independently. He became continent and cared for his own toilet needs. He regained the upright position. Once more he stood on his own two feet, both as an organism and as a human being.

While the individual is intact and upright (vertical), he overlooks precisely those skills which maintain him in that condition. Once he is flat on his back (horizontal), he focuses on the lost skills and the lost freedom. The adult who has lost the ability to stand on his own two feet physically is also flat on his back psychologically (down, prostrate). To face dependency on others for every physical and physiological need is a psychologically devastating experience no matter how damaged the patient may be by the process of the illness.

Task	March 1956	October 1956
(1) How far is it from your ward to OT clinic? (Actual distance —67 rods.)	100 rods 80 rods 100 rods	40 rods 10 rods 10 rods
(2) Walk to wall (15 ft.). Estimate distance walked.	30 ft. 2 rods 30 ft.	10 ft. 12 ft. 10 ft.
(3) Estimate distance from Topeka to Seattle.	3000 miles 4000 miles 3000 miles	3000 miles 3000 miles 3000 miles
(4) Where are you?	Army. Out of Army Hospital	A-9 (correct no. of clinic.) Topeka VA Hosp. Topeka Hosp., Kans.

TABLE II

Space Estimates

Task		March 1956	October 1956
(1) How tall are you? (Actual 5'6")		5'5" 5'8" 5'8"	5'8" 5'8" 5'8"
(1) How tall are you?		(Actual 6'3") 7'2" 7' 7'	(Actual 5'6") 5'8" 5'8" 5'8"
(3) How much can you lift?		Dont' know 70 lbs. 300 lbs.	20 lbs. 30 lbs. 20 lbs.
(4) Estimate weights. (Actual 5 lbs.)	R hand	10 lbs. 20 lbs. 10 lbs.	5 lbs. 5 lbs. 5 lbs.
	L hand	25 lbs. 40 lbs. 25 lbs.	5 lbs. 5 lbs. 5 lbs.
(Actual 10 lbs.)	R hand	30 lbs. 25 lbs. 20 lbs.	10 lbs. 10 lbs. 10 lbs.
	L hand	30 lbs. 25 lbs. 25 lbs.	10 lbs. 10 lbs. 10 lbs.

TABLE III

Self Estimate

Now let us examine the dimensions of our patient's world when he started treatment; he sat on the ward tied to a chair, nearly blind, partially deaf, and isolated. His world had a diameter of six feet, his arm-span from fingertip to fingertip. In this shrunken world the patient sat alone, with only an occasional impingement from the outside when others came "to do" for him. Space had no personal meaning beyond the six-foot diameter of his world. Since all space experience is necessarily personal, his spatial orientation beyond six feet disintegrated. The few remaining memories of distance became meaningless rote material. As the patient began to move beyond the six-foot boundary, his world expanded and "outer" space and distance once again came within the sphere of his experience. When he was able to walk 1000 feet, he experienced 1000 feet, and thus his world grew proportionately. Time changed, too. Initially, time was a meaningless continuation, with day blending into night, and sleep undifferentiated from wakefulness. When an important event took place each day (the corrective therapy hour), the experience of time changed. He once again experienced anticipation, passage, and expiration of an hour. His world expanded in terms of time and space as each of these dimensions took on a new, personal meaning.

Disorientation in time and space and certain other "organic" changes in patients with brain damage have frequently been regarded as manifestations of cellular destruction. We must remind ourselves that the disturbed function in the patient is not the result of the dead cells, for dead cells do not function; the observable changes are evidence of the functioning and reaction of the remaining cells. In our present state of knowledge it seems most useful to view organic damage to the brain as a specific stress to which the organism reacts. The individual reacts to the stress of brain damage, just as to other stresses, in his own unique manner which is understandable only from the individual life history. (3) The stress of the organic brain damage differs from other physiological and psychological stresses in that it specifically injures and limits the adaptive mechanism itself. The "organic" signs, including spatial and temporal disorientation, are part of the individual's unique response to the stress of brain injury. The response to the stress can be altered by psychological influence alone, without concomitant reversal of the cellular damage or the "learning" of the lost function by other cells.

As our patient's world expanded, his behavior changed. The world grew and he grew in self-esteem and independence. He was now able to take a stand in the world. While the patient was described as droopy, placid, vague, stooped, soft, squat, and feeble in the movie made in March, 1956, he was observed to be straight, strong, resistive, taking a stand, alert and oriented in October, 1956. As he regained his independence through activity, he was no longer flat on his back, but stood firmly with both feet on the ground in relation to the world and in opposition to the world and thus regained his individuality as a human person.

It is of interest that a change in his behavior was first noted during the corrective therapy hour. His level of function consistently lagged on the ward. In understanding this we must remember that the hospital ward is an institution for the care of the individual where things are "done for" him. Smoothly operating wards "do" for the patients, seducing them into greater and greater dependence. It is much easier to "do for" the patients than to help them "do for themselves." Ward routines may actually discourage the patient from maintaining and regaining some measures of independence in caring for himself. "I like to do things for myself" is not a unique observation by our patient, but one which is almost universal. He responded to expectations. On the ward he was considered helpless, a noisy, messy, nasty old man. This was how he acted. In the corrective therapy clinic he was treated with "expectancy." The emphasis was on his abilities rather than disabilities. Acceptable behavior was expected and he behaved acceptably.

In our study we have focused on the observation that the treatment resulted in considerable change in the patient's stance, posture and movement. Literally he was placed back on his own two feet. No one has described the psychological importance of the upright posture as clearly as Erwin Straus: (2)

> . . . an individual who has lost or is deprived of the capacity to get up and keep himself upright depends for his survival completely on the aid of others. Without their help, he is doomed to die. A biologically-oriented psychology must not forget that the upright posture is an indispensable condition of man's self-preservation. Upright we are, and we experience ourselves in this specific relation to the world.

Our patient had lost the ability to hold himself upright and to maintain himself upright. He no longer experienced vertical space. He was unable to act vertically; his world was constricted (six-foot diamter) and flat. He literally lived in a six-foot, circular, flat world. Treatment expanded the patient's world both vertically and horizontally. As it changed his world, it changed him. "Individuality is, what its world in the sense of its own world, is." (1) Once again he stood on his own two feet; space and time were experienced in terms of the new, expanded world.

Question	March 1956	October 1956
(1) Did you notice any difference in the patient?		Yes—100%
(2) Choose 3 words to describe patient's stance	insecure droopy frightened placid feeble uncertain vague rigid stooped unkempt preoccupied dull doubtful soft flabby squat placed there takes no stand leans back	inquisitive assured straight strong confident aware erect friendly relaxed oriented neat alert cheerful outgoing takes stand not malleable resists
(3) Describe any difference yon noted in patient's appearance. (Patient's weight varied from 157 lbs. to 162 lbs. throughout the 7 months.)		thinner muscle tone and coordination better stronger about the same (1 observer) looked better more erect and confident neater more satisfied
(4) Describe the patient's walk.	shuffling wandering toddling sliding propelled walks sideway walks as if pushed walks as if ice skating leads with one leg leans back slow no sense of direction	moving striding walking walks to a place rather than just walking walks into the world leaned forward lifts feet
(5) Describe use of hands.	fumbling searching fixed used as feelers thick rigid	positive used together useful texture in touch deft confidence in hands coordinated judging agile expressive
(6) How does he use objects?	not aware of world right, left, up and down have no meaning afraid of objects sees them only as obstacles	object awareness direction meaningful space occupying for orientation

TABLE IV

Comparison of Patient In Two Movies by 37 Observers

The patient's gait was notably altered during the seven months of treatment. This was in no way related to increased muscle strength, extended point mobility, nor improved coordination (examination revealed no such changes). The change in gait appears directly related to the psychological implications of becoming upright, independent, and living in an expanding world. Straus (2) has beautifully captured the essence of human motion in the following sentences:

Continued on Page 22

A KINESIOLOGICAL FOUNDATION FOR AN AMBULATION PROGRAM FOR THE HEMIPLEGIC PATIENT*

DAVID S. BILOWIT, M.A.**

Over thousands of years, through phylogenetic changes, human gait has evolved as a very efficient method of locomotion. It is a sequence of alternate acceleration and deceleration which may be divided into support and swing phases. In walking the swing phase is always shorter than the stance phase.

All normal gait is essentially the same. Uniqueness is due to accentuation of a phase, length of stride or other minor deviation. These deviations are caused by differences in individual characteristics such as height, weight, physique and general physical fitness, which necessitate differences in gait in order for persons to walk most efficiently.

When there is a deficiency that exceeds normal limits it will affect the gait pattern by causing extra movements to compensate for the defect. One of the common deviations is that caused by paresis in varying degrees of one side of the body; i.e. the hemiplegic gait.

It has been estimated by Rusk (9) that there are as many as one and a half million hemiplegics in the United States. In the adult, hemiplegia is the result of brain damage due to embolus, thrombosis, tumor, hemorrhage or trauma. The resultant disability may vary from severe paresis with flaccidity to an almost complete return of function. There is usually return of function in varying degrees which appears to be greater in the larger muscle groups of the lower extremity.

We must remember that the adult's central nervous system is practically unable to regenerate itself. Even peripheral nerves that regenerate anatomically show great discrepancy between this anatomic regeneration and useful function. It therefore may be assumed that when we have very early return, the loss of function may have been caused by edema and shock rather than actual destruction of nerve tissue.

This may acount for the fact that the sooner this return takes place, invariably, the greater the return of function. When the return of function is slower it rarely equals that previous to the disability. This is because restitution of function is gained through re-education of other areas. But, as Hughlings Jackson said, "Compensation does not, in this scheme, mean that nervous arrangements take on duties they never had before, but that having more or less closely similar duties, they serve—not as well, but only—next as well as those destroyed." (3) The fine motions necessary for manual dexterity require perfect coordination and any deficiency here is instantly recognized and, according to Hicks, "no amount of makeshift contractions of muscles can cover up the defect . . . what passes for useful function in a leg fails here." (4) Actually, therefore, return of function may be no greater in the lower extremity, but may pass as such because motions are grosser in nature.

Our experience concurs with that of Lorenzo *et al* (7) that prolonged flaccidity is a poor prognostic sign and one of the major causes of failure of the hemiplegic to ambulate.

If neuromuscular reeducation is initiated soon after the CVA and there is no sign of returning function in specific muscle groups within three months, little can be expected. If the following three months still show no change, the residual damage may be considered permanent and the primary objective of neuromuscular reeducation should be changed to rehabilitation utilizing "what the patient has left." We should not spend time at this point in areas that have not responded at all. However, though existing damage may be permanent, the patient can continue to improve in his ability to carry out the tasks of daily living through better techniques, increased general strength and endurance and confidence gained from the successful achievement of these tasks under the supervision of the therapist. The physician, on the basis of his prognosis at this time prescribes the program which will most benefit the patient.

The purpose of this paper is to present findings upon which an ambulation program may be founded and to lay the groundwork for such a program.

In an analysis of normal ambulation in man we find the following sequence:

1. Pushing off on the ball of the foot, the leg thrusts off with the hip in extension, the knee "straight" (actually not quite in full extension) and the ankle plantar-flexed.

2. The hip and knee are flexed; the ankle is dorsiflexed. As the leg swings forward it internally rotates; the pelvis starts in transverse rotation with the trunk rotating transversly in the opposite direction. As the foot approaches the midline of the body, the knee starts to extend, the ankle dorsiflexes. The trunk is

*Presented at the Second Tri-Organizational Conference, Atlantic City, N. J., July 24, 1958.

**Corrective Therapist, Veterans Administration Hospital, East Orange, N. J.

inclined forward and, as the heel strikes the ground, some weight is simultaneously placed over the foot. At this point the hip and knee are in extension (here too, the knee does not completely extend; it actually flexes slightly after the heel contacts the ground). The motion from heel strike to plantar flexion as the foot prepares to leave the ground is a smooth continuous one. The moment full weight is on the foot, rotation reverses and the leg "unwinds" in external rotation.

3. Following push off, the pattern is repeated on the opposite leg.

A comparison of hemiplegia with normal gait was made electromyographically by Marks and Hirschberg (8). They studied seven muscles during gait—the gluteus maximus, gluteus medius, adductor longus, semitendinosis, vastus lateralis, gasterocnemius and anterior tibial. In normal gait all examined muscle groups showed electrical activity at transition from swing to stance phase and during beginning of stance phase. During the beginning of the stance phase the gluteus maximus and medius and semitendinosis were active. The gastrocnemius contracted strongly about the middle of this phase and the anterior tibial showed variable activity, strongest at the beginning of the stance phase. In the hemiplegic the paretic leg showed a prolonged swing phase. During the stance phase the gastrocnemius showed low amplitude and contracted throughout the entire phase. Quadriceps activity prolonged through most of the phase. Surprisingly, in the non-paretic (the so-called "normal") leg of the hemiplegic, changes in the pattern of activity were similar to the paretic leg. In the nonparetic leg the swing phase was shortened compared with the normal and consequently considerably shorter than the swing phase in the paretic leg. This shortened swing of the non-paretic leg may be due in part to the fact that the patient was insecure in his stance on the paretic leg and attempted to get off it quickly.

It has been noted by the writer that the hemiplegic utilizes the rectus femoris as a hip flexor to bring the leg forward during the swing phase. The rectus femoris, being a two-joint muscle, also acts as a knee extensor, its primary function. Normally, as the hip is flexed in the forward swing the knee extends by a minimal contraction of the quadriceps as the foot approaches the midline of the body, and momentum assists the movement.

In the hemiplegic, as the rectus femoris contracts, extending the knee as the swing starts, the semitendinosis is in mild, but prolonged contraction (as is the gastrocnemius) attempting to flex the knee and plantar flex the ankle, bringing about the familiar slightly flexed, rigid knee of the paretic leg in the swing phase. This has been corroborated by an electromyographic series by Hoerner and Bilowit.* The oscilloscope showed high amplitude as the rectus femoris contracted strongly with the initiation of swing, relaxed as heel contact was made and at this point the vastus lateralis contracted strongly and continued to contract as weight was placed over the foot.

In establishing a program the rationale must be based on sound physiology. We would never dream of placing an athlete on the field before properly preparing him by training. The football player is not trained *by* the big game, but *for* it. Exercises such as squats, "duck walking," running and lead-up activities precede training games. Why reverse this sound principle in therapy? Why start with the big game, ambulation? Though the benefits of early ambulation are many, they must not blind us to the pitfalls. Too often the goal becomes ambulation *per se* rather than correct gait patterns. In the instance of the hemiplegic, the dangers are greater than the benefits, for the benefits may be achieved by other activities such as standing balance or partial knee bends.

Ambulation should be initiated only after the prerequisite activities have been satisfactorily completed. In this way we can achieve the most efficient, safest pattern reducing energy costs and allowing greater ambulation.

The psychological advantages of a cosmetic gait should not be underestimated. No patient wants to be "different." The less deviation from the normal, the less self conscious and ill at ease the patient will feel. This is an important aspect because many hemiplegics became apprehensive, unsure of themselves and easily frustrated due to other complicating factors.

Though the program may be carried out in situations where there is a group, therapy must be on an individual basis preceded by an examination to determine the patient's individual needs, though these needs usually fall within a general pattern.

The first problem is weight bearing. The patient must be able to support his weight correctly without locking the paretic knee. From this he advances to balance activities and exercises. The patient may thus derive the physiological benefits of bearing weight on the long bones in the erect position and the cardiovascular system remains adjusted to the upright position.

Once the patient is able to stand, attention is turned to the manner in which he propels himself forward during ambulation—namely, hip, knee and ankle flexion. Neuromuscular facilitation techniques (3,6) were found to be most satisfactory in the reeducation process. For example, hip, knee and ankle

*Unpublished Study, July 1958. (Using a two channel TECA electromyograph with needle electrodes.)

flexion in the supine position may be exercised by placing the hand on the dorsal surface of the foot and pushing down, placing the flexors of the leg on stretch and at the same time providing manual resistance to the total flexion motion. The stretch, aided by the proprioceptive mechanism by the manner in which the resistance is applied, facilitates the motion and, at the same time, the resistance requires the use of a larger number of motor units to innervate more muscle fibres necessary to pull against the resistance. This results in stronger synaptic bonds, hypertrophy and increased strength of the muscle groups involved.

The gastrocnemius should not be overlooked. Because the foot is often forced into plantar flexion in the hemiplegic gait we must not assume that this is due to a weak anterior tibial and a strong gastrocnemius. It is usually due to the fact that the gastrocnemius is in a state of continual contraction starting at the end of the swing phase and continuing through the stance phase. Normally, the gastrocnemius does not contract until the middle of the stance phase, at which time it contracts strongly and is no longer active by the end of the stance phase. Of greater importance is the fact that at this time the anterior tibial is not contracted in antagonistic action. Thus, often exercises are need to strengthen the gastrocnemius, which in the hemiplegic may appear strong but actually contract at the wrong time, coinciding with the contraction of the anterior tibial and hindering its action. It is not uncommon, therefore, for both to need strengthening.

A complicating factor hindering dorsiflexion is the tight tendo achilles commonly found in patients where rehabilitation has not been initiated early. In these instances stretching should always precede dorsiflexion exercises. Self stretching has been found more efficient than stretching by the therapist. (1)

The laboratory studies of Sherrington and the clinical studies of Hughlings Jackson point to the fact that the motor cortex does not recognize individual muscles, only movements; in normal voluntary motion muscles are not used in isolated contraction, but in groups as necessary to perform the required movement. Attempts to reeducate individual muscles are neither sound nor practical, for this is a difficult stunt even for a well-trained athlete, let alone a patient with motor cortex damage. Reeducation should always be carried out through *movements* carried out in the desired pattern. If this is successfully accomplished we will be re-educating the muscles that produce the movement.

We are fully cognizant of the fact that all patients will not ambulate as we wish and others may never ambulate at all. The physician must establish a realistic treatment objective after the first few months of treatment on the basis of prognosis. If the patient will not be able to achieve the desired gait, but ambulation is indicated, then we should train him to be more efficient in the gait he will use. Patients using the so-called "hemiplegic gait" for long periods of time develop the muscles they utilize and despite continued ambulation do not get stronger in muscles that are not utilized. It has been noted that the rectus femorus contracted strongly in the swing phase, relaxed at heel contact at which time the vastus lateralis contracted and remained contracted for most of the stance phase. These two muscles showed high amplitudes on the EMG. It would appear logical therefore, that, rather than allow the patient to strengthen the quadriceps by constant ambulation, it would be better for the therapist to do so with heavy resistance exercises through full range of motion of knee extension. This can be accomplished quickly and efficiently and thus the patient can be prepared for ambulation with minimal calculated safety risk and maximum efficiency of movement.

Summary

Based on long time observations and corroborated by electromyographic findings a foundation for a physical rehabilitation program for training hemiplegics to ambulate has been formulated.

Acknowledgement

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THE RESPONSIBILITY OF THE UNDERGRADUATE COLLEGE IN THE PREPARATION OF CORRECTIVE THERAPY AND REHABILITATION PERSONNEL*

OSCAR H. CINER, Ed.D., C.C.T., F.A.C.S.P.**

Institutions of higher education have, for a long time, been sensitive to the rise of new professions. Whenever a need for specific professionals has arisen however, academic machinery has been established for the proper training of such personnel. As an example of this, we can look at the case of the training of corrective therapists. Most of here are familiar with the origin of this specialty. The original cadre was born out of a need for this service in the Armed Forces during World War II. Corrective physical rehabilitation and reconditioning schools were hastily established for the didactic and clinical training of these personnel within the Armed Forces.

Following the termination of hostilities, the value of this new discipline was realized, and a large percentage of these therapists were offered, and accepted positions with the Veterans Administration. However, it did not take long for those interested in the future of this speciality to realize that new people would have to be attracted to, and properly trained for this profession. And so, the clinical training programs for corrective therapists were established at numerous colleges and universities across the country, with the cooperation of neighboring corrective therapy sections. In essence, a clinical affiliation was established between the college or university and the Department of Physical Medicine and Rehabilitation of the nearby hospital or installation. Many of you here were instrumental in the development of these programs. By and large, these clinical affiliation training programs, were (and still are) on the graduate level. The student completed the standard undergraduate courses for a B.S. degree in Health and Physical Education, and then took specialized graduate courses leading to a Master's degree in corrective therapy, corrective physical education, physical education in rehabilitation, adapted physical education, reconditioning therapy or some other such title.

I shall touch on this diversity a little later. This consisted of didactic training in pertinent courses at the university, and clinical training at the corrective therapy section. I stated that by and large, these full clinical affiliations leading to the complete training of corrective therapists were on the graduate level. And in my humble opinion that is exactly where they belong—on the graduate level.

These programs proved quite successful, and for a time fulfilled the need. Numerous competent therapists are products of these programs, and many of them have made significant contributions to the field. But the rapid advances made by rehabilitation in our society, and the overflowing of corrective therapists out of the Veterans Administration into state, local and private institutions has necessitated a re-evaluation of the training program so that it will not merely replace those therapists lost by attrition or an occasional newly created position. A dynamic new program is needed which will orient and recruit new candidates, train many new therapists, and educate all physical educators as to the existence of this discipline.

It was both natural and proper to turn our attention to the undergraduate colleges at this point. All too often, have we heard a physical education graduate student tell us, "It is too bad that I did not know about corrective therapy when I graduated. If I had, I probably would have chosen this work. However, now that I have 'put in' a few years teaching (or coaching or administration), I am reluctant to switch to corrective therapy."

This story, heard over and over again, highlights the importance of focusing our attention on the undergraduate college as well as on the graduate level. Unfortunately, a number of early enthusiasts attempted to establish an educational training curriculum on the undergraduate level which was similar to that which proved effective on the graduate level. I consider this unfortunate, because the curriculum of the graduate and undergraduate colleges are so diverse that such an attempt is impractical and without benefit to our profession.

Allow me to explain. The graduate training curriculum for corrective therapist recommends 20 to 30 credits in specialized relevant courses. Corrective therapy is a specialized branch of physical education, and graduate schools allow for such specialized training within physical education. However, undergraduate schools of physical education do not allow for such specialization within one's major field. The reason is only too obvious to those engaged in teaching physical

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**Long Island University

education on the undergraduate level—State requirements dictate that the students complete a large bulk of specific physical education courses. On the other hand, there is constant strong pressure to add additional cultural, educational and general courses to the physical education student's curriculum, so that he will become a well-rounded educator rather than merely a physical training specialist. The poor student cannot be burdened with more than 130-odd credits in his four year undergraduate curriculum. There is very little more room for optional courses within one's major field. We can thereby see that an attempt to add 20 to 30 credits to the undergraduate curriculum for those who are interested in corrective therapy would not get very far. Anyone who has attempted to add just one course to the undergraduate curriculum knows that this can be a formidable task, and that it is often necessary to eliminate an old established course in order to make room for this new one. At this point, you may well ask, "What role should the undergraduate college play, and wherein does its responsibility lie?"

The undergraduate physical education college can play a vital and significant role and has a most important responsibility in this area. This responsibility is not in the complete education and training of the corrective therapists, but rather in the orientation of all physical education students as to the existance of the corrective therapy specialty, in the stimulation of interested students to find out more about this area, and in the motivation of students with aptitude to continue within this speciality with a full clinical affiliation on the graduate level.

I therefore advocate an orientation affiliation between undergraduate colleges of physical education and nearby institutions which include corrective therapy sections. I further advocate that all the physical education students receive this orientation despite the fact that only a small select percentage will become therapists. There is strong justification for this. The field of physical education has many sub-divisions or specialities, such as teaching, dance, recreation, swimming, administration, rehabilitation, and so forth. A competent physical educator should have a general knowledge of all these specialities as well as a thorough knowledge of his particular speciality.

I believe this orientation affiliation with undergraduate colleges should be established along the following lines. One, or if feasible, two courses should be added to the undergraduate curriculum — these coursese to be called "Orientation into Corrective Therapy and Rehabilitation" and "Principles and Practices of Corrective Therapy and Rehabilitation." They should include field trips to the affiliated hospital and lectures on pertinent material at the college. In the event that it is not possible to add any new courses to the curriculum, there is still an alternative. Every undergraduate physical education curriculum includes a course in "Atypical Conditions" or "Corrective Physical Education." If the instructor could have one additional credit added to this course, he could then include the field trips and much pertinent material. However, this is the compromise alternative. The ideal situation would require adding the courses I mentioned a moment before.

Up to this point, I have been suggesting these proposed courses for all undergraduate physical education students. However, physical educators are not the only students who can find these courses interesting and advantageous. Pre-medical students, psychology majors, guidance students, students interested in one of the other adjunctive therapies all can find these proposed courses of considerable benefit. And so I would like to see the above mentioned courses offered as electives for non-physical education majors, as well as required courses for physical education majors.

One of the problems which plagues educators who are trying to foster this speciality, is the diversity of titles. There are just too many names for the area which encompasses corrective therapy. Just to mention a few, there are: Physical education in rehabilitation, exercise therapy, reconditioning therapy, corrective, remedial or atypical physical education and medical gymnastics. I personally believe that every one of these titles is a good one, if it were the only one in use. It is the responsibility of our Association for Physical and Mental Rehabilitation to take the lead in fostering a uniform title. There have been a number of studies carried out in regard to a name. Now I believe the Association should decide upon one title and then go "all out" in urging all schools, colleges and universities to adopt this one title. Speaking as an educator, I would welcome a directive from the Association which would lead toward uniformity and thus remove a thorn from our sides.

And now to return to the recommended orientation affiliation program in corrective therapy for undergraduate physical education students. This program should have seven specific objectives. These are:

1. To introduce all physical education students, as well as interested non-majors, to the field of medical rehabilitation. Most physical education students are future teachers. They should know enough about rehabilitation to be able to discuss it intelligently and be able to guide those interested in the field or those in need of rehabilitation services into the proper channels.
2. To demonstrate the place of medically oriented physical education in a medical rehabilitation service. There are still a sizable number of leaders in physical education, health education and medicine who are skeptical in regard to the rightful place of physical education in medical rehabilitation. Fortunately, this skepticism is dissolved

when the results of corrective therapy are demonstrated. All physical education students should have an opportunity to witness these results personally.

3. To acquaint the students with various common disabilities and handicaps. Too many physical educators and school administrators have a fear of allowing persons with disabilities to participate in any physical activity. Yet we know that these persons usually have many abilities and physical assets despite their disabilities; and they should be allowed to enjoy and benefit by many wholesome physical activities.

4. To allow the students to observe how various handicaps can be overcome, minimized or alleviated through remedial and corrective exercises. This is the essence of the orientation affiliation program. Most of the students find this point fascinating, whether or not they are potential therapist candidates. Such observation makes a lasting favorable impression on the students, and gives them a healthy respect for this specialty.

5. To show the application of kinesiological principles, and various types of exercises. Corrective therapy is a profession, based upon proven scientific principles. Within this point, the students are shown the "tools of our trade," the various vehicles through which we work, the research which has been performed in this specialty, and the need for further growth and development within corrective therapy treatment.

6. To acquaint the students with opportunities for employment in a medical rehabilitation service. In one respect this might be considered the "punch line" in the program. Recruitment of new personnel into the field is an important phase of the plan, although it is certainly not the sole purpose. Salaries and opportunities for advancement within as well as outside of government service are improving, and the students will be most anxious to learn all the details in regard to this point.

7. To urge those students who show an interest and aptitude for working with the disabled to continue their education on a graduate level under a full clinical training affiliation, and to enter the profession as fully trained therapists. This point, I consider, the ultimate goal of the program. We are cognizant of the fact that only a small percentage of all physical education students will become therapists. And this is as it should be. Most students do not wish to work with "sick people," and do not have the personality to make competent, effective therapists. However, it is anticipated that the number of students who will decide to make rehabilitation their career under the program will be far greater than it had been in the past. Furthermore, we will have the confidence of knowing that no potential therapist was lost to the profession due to ignorance of its existence, or misleading information in regard to its purpose and possibilities.

An orientation affiliation based upon these objectives is being established between an undergraduate college on the East Coast which includes a school of physical education and a neighboring Veterans Administration hospital, which contains a corrective therapy section. An entire class of physical education students received the orientation. It was not feasible to add a new course to the curriculum at this time, and so the orientation was added to a junior year, required, relevant physical education course. The immediate results as indicated by the remarks of the students at the end of the semester were most gratifying. None of the physical education students knew of the existence of corrective therapy (or anything relating to it) prior to this course. About one-third of the students showed a real interest in this field and expressed a desire to learn more about it. It is anticipated that a few of these students will continue their studies and then seek employment as corrective therapists. The other students whose interest in physical education lies within the specialties of teaching, coaching, swimming or administration found this orientation to be extremely interesting and a most worthwhile educational experience. These latter students will never be therapists, but they are now advocates of this specialty, and can, as future teachers and leaders, encourage their students to learn more about this discipline.

Summary

In conclusion, I would like to reiterate my impression of the responsibility of the undergraduate colleges in the preparation of corrective therapy and rehabilitation personnel. It is not to ignore such training under the premise that it is the function of the graduate schools. Nor is it the undergraduate college's task to attempt to set up programs similar to those in existence at graduate colleges, and thus in a sense to compete with them. It is their responsibility to acquaint all physical education students, as well as any other interested students, with this specialty and to guide potential therapists into the graduate schools where they can receive intensive and complete training.

Such a two-fold harmonious training inter-play between the undergraduate and graduate colleges, would do most to benefit the future of the corrective therapy profession. It would give us a large group of staunch advocates in related professions, and ever increasing numbers of potential therapists guided to the graduate college for full and thorough corrective therapy training.

THE EFFECTS OF BICYCLE RIDING ON SOME PHYSICAL FITNESS SCORES AND ON FLEXIBILITY*

PHILIP J. RASCH, Ph.D., CCT

WILLIAM R. PIERSON, Ph.D.

Considerable information concerning the mechanical efficiency, optimum rate, work output, and energy consumption of bicycle riding is available in the various texts on the physiology of activity, (7,6,4) but there appears to be no data in the literature in English regarding this activity's effect on physical fitness.

In the summer of 1958, a male extern** at the Los Angeles County Osteopathic Hospital, age 22, decided he would commence training for a bicycle tour during his vacation, volunteering to undergo physical fitness tests and flexibility measurements before commencing training and after completion of this trip.

The physical fitness tests utilized were the Harvard Step Test Recovery Index and the Bruce Physical Fitness Index. The Harvard Step Test was administered according to the instructions of Weiss and Phillips.(9) The subject stepped on and off a bench 20 inches high as a cadence of 30 steps per minute for a maximum of 5 minutes, and his score was computed by the formula:

$$RI = \frac{E \times 100}{2C}$$

where

E = duration of exercise in seconds.
C = sum of the pulse counts from 1 to 1.5 minutes; 2-2.5 minutes, and 3-3.5 minutes.

This test has been widely used abroad to determine the influence of physical training on physical capacity, (1,8,5) although American studies have shown that it does not correlate highly with time for the mile run. (3)

The Bruce Physical Fitness Index has been advocated as "an improvement of the formula employed by the Harvard Fatigue Laboratory for evaluating performance in athletes at exhausting-work-loads."(2) The exercise consists of walking on a motor driven treadmill on a 10 per cent grade at the rate of 1.73 miles per hour for a maximum of ten minutes. This is considered to be "roughly comparable with ordinary daily levels of physical activity, and the duration is long enough to ensure the optimal adaptations of respiration and circulation." (2) The subject's score is computed by the formula:

$$PFI = \frac{E \times R \times K}{C}$$

where

E = duration of exercise in minutes.
R = average respiratory efficiency (difference in oxygen concentration between inspired and expired air).
K = 100.
C = cumulative heart rate for the first three minutes of recovery.

PFI scores computed by the above formula are evaluated on a continuum in which 19 is typical of sedentary individuals, 23 is average, and 26 is characteristic of athletes. According to Bruce and his collaborators, the rationale of this test lies in the fact that the scores are related to the severity of anoxia at the tissue level, and this in turn is related to the ability to do work. They regard the PFI as providing a quantitative measure of integrated psychosomatic, respiratory and circulatory performance in relation to the stress of exercise. (2) So far as the writers are aware, there are no reports in the literature of the use of this test to measure changes in physical condition resulting from athletic training.

In this study the average respiratory efficiency was obtained by use of an Arnold O. Beckman Model C Oxygen Analyzer, and the cumulative heart rate was recorded by means of an Electromedical Engineering Company heart rate counter.

The flexibility tests consisted of the following:

1. The subject laid supine and successively raised each leg as high as possible while keeping the knee in extension. The angle between the midline of the lateral aspect of the thigh and the horizontal was then measured with a protractor, in the manner described by Wells. (10)

2. The subject stood erect and raised the thigh as high as possible, with the knee flexed. The angle between the vertical and the midline of the lateral aspect of the thigh was then measured. A straight edge was used to insure that the subject did not lean backwards or forwards, and the measurements were made with a goniometer which incorporates bubble levels.

These flexibilty measures were recorded to obtain evidence on the validity of the belief common among athletes that bicycle-riding makes one "muscle bound"

*Report No. 14-58, College of Osteopathic Physicians and Surgeons, Los Angeles, Calif.

**The writers are indebted to Victor Kovner for his cooperation in this investigation.

Test	*Before*	*After*	*Difference*
Harvard Step Test Index	54	88	+34
Physical Fitness Index	23	22	− 1
Hip Flexion			
Right	71 degrees	79 degrees	+ 8 degrees
Left	73 "	80 "	+ 7 "
Thigh Elevation			
Right	42 "	64 "	+22 "
Left	42 "	62 "	+20 "

TABLE I

EFFECT OF BICYCLE RIDING ON PHYSICAL FITNESS SCORES AND ON FLEXIBILITY

(that is, tends to reduce the normal range of movement) in the thighs.

All four tests were repeated shortly after the subject returned from his vacation trip. The data obtained are shown in Table I.

Discussion.

During the training period which preceded his vacation, the subject rode approximately 5-8 miles every other week-day and approximately 10-15 miles each weekend. During the actual trip he covered an estimated 330 miles in seven days, on some days riding as much as 60 miles. He reported that once he became accustomed to the exertion there was a minimum of muscular pain and discomfort even after lengthy rides, and he was of the opinion that there was a definite improvement in his physical fitness for bicycle riding as the training period and the actual trip progressed.

His subjective impressions were confirmed by the fact that his Harvard Step Test RI improved 61 per cent. However, his Bruce PFI simultaneously showed a *decrease* of approximately 1 per cent. No valid conclusions can be drawn from "a series of one," of course, but this does raise the question of whether the Bruce PFI is an improvement on the Harvard Step Test RI in the sense that the word "improvement" indicates a better method of measuring the same thing. So far as the writers have been able to find, there are no reports in the literature of studies in which the Harvard Step Test Recovery Indices of a group of subjects has been correlated with the Bruce Physical Fitness Indices for the same subjects. A statistical study of this type has been undertaken and will be reported later.

The subject's increase in the flexibility measurements recorded suggests fears that bicycle riding of this intensity may render a previously sedentary individual "muscle bound" are probably groundless.

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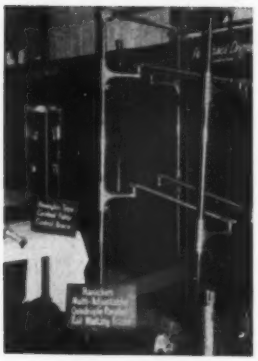

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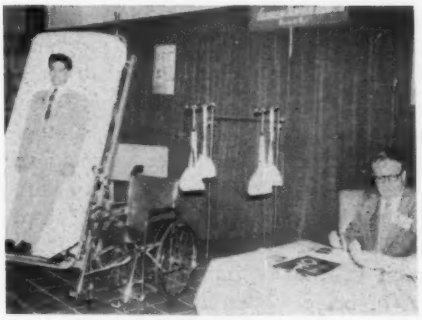

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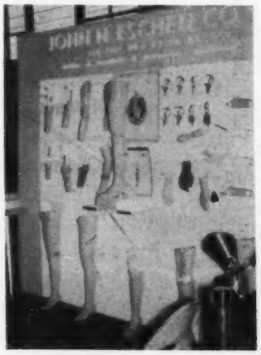

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BRIDGING THE GAP WITH THE MEMBER-EMPLOYEE PROGRAM*

REUBEN J. MARGOLIN, Ed.D.**

The rehabilitation of the psychiatric patient back to a job and community living is paradoxically the simplest and most difficult of all tasks in rehabilitation. Difficulty may stem from such sources as the hospital being more custodially than therapeutically oriented, poorly developed rehabilitation programs, personnel shortages, and misconceptions and ignorance about mental illness being common within the community. However, even with a highly developed effective rehabilitation program there may be difficulties in occupational placement unless there are built-in features which facilitate the transition from the hospital to the community. Too often, the gains made in the hospital are lost when the patient is discharged without the benefit of a transitional and follow-up experience to help consolidate these gains. The member-employee program, in the opinion of the speaker, is one of the most effective ways of bridging the gap between the hospital community.

No one can deny that today the rehabilitation of the psychiatric patient is imperative. The statistics emanating from such reliable sources as the National Institute of Mental Health and the National Association of Mental Health are truly startling. For example, 55% of our hospital beds are devoted to psychiatric conditions. One out of every 20 citizens in our society will be hospitalized in a mental institution at one time or another during his lifetime. One out of every ten, it is estimated, requires psychiatric aid, and all of us, of course, during critical periods of stress and strain require some emotional first aid.

Furthermore, the cost of mental illness is exorbitant. The tiny state of Massachusetts, for example, has requested 70 million dollars for the next fiscal year for the care and treatment of the mentally ill. A recent report noted that one-third of all State employees in Massachusetts were employed in the State Department of Mental Health. 40 out of 48 states claim that the care and treatment of the mentally ill represents the greatest outlay of the tax dollar. The problem has become so serious that Congress, three years ago, created a Joint Commision of Mental Health and Mental Illness, and allocated to this commission two million dollars to find out 1) why there is so much mental illness in our country; and 2) what can be done about it.

The temper of our times provided the member-employee program a fertile medium in which to develop. Today, there is a revolution going on in our mental hospitals. Such forces as the advent of tranquilizing drugs, the creation of therapeutic communities, the foster home program, the expansion of physical medicine and rehabilitation programs all contributed to this revolution. Despite all these elaborate features, it was evident that there were still some missing links. We must not make the erroneous assumption that because a patient has received maximum hospital benefit and is considered psychiatrically ready for discharge that he is *ipso facto* ready for a job in the community. The patient must be work-conditioned. He must have the opportunity to work a full eight hour day under realistic conditions where he interacts with regular employees, on an equivalent status level; where he learns to take orders from his boss without retreating into his illness if the situation is stressful; and where he receives remuneration for his work.

Specifically, the member-employee program accomplishes all of these goals. When a patient reaches a certain level of recovery and has shown definite indications of social and work adjustment, he is approved by our medical rehabilitation board to participate in the member-employee program. He is discharged from the hospital, moves into the member-employee dormitories, and no longer is considered a patient. Here, there are no pass restrictions, and he can go and come as he pleases when he is through with his work day. He receives a temporary civil service appointment and a salary for his work. He is expected to fulfil the same duties and obligations as any regular employee in the hospital. All jobs in the hospital are open to member-employees regardless of whether they are unskilled, semi-skilled, highly skilled or professional positions. It is important to get away from the tendency to place individuals with a psychiatric disability only in menial jobs. The finest principles of vocational counseling and selective placement must be utilized at all times comparable to what is done for the physically handicapped.

According the member-employee a status different from that of patient is vitally important. To a great extent the degree to which the hospital staff can reorient their perceptions and accept the changed role

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*Presented at Clinical Session, Eastern States Chapter, APMR, N. Y. Chapters, AART and AMRDC, New York, Nov. 7, 1958.

**Counseling Phychologist, Member Employee Supervisor, Veterans Administration Hospital, Brockton, Mass.

and status relationships will determine the effectiveness of the member-employee program. The classification, "mental patient" has negative connotations for the patient himself, the hospital staff, the patient's family, the employer, and the community in general. In fact, one of the strongest points in selling an individal with a psychiatric disabilty to the employer is the fact that he is hiring not an ex-mental patient but an individual with a proven salaried work history since his illness.

How effective this program has been is well illustrated from our statistical data for the period Feb. 8, 1954 to Oct. 31, 1958 (Fig. 1).

Number who have been on program	282
Discharged to a job in the community	180
Returned to hospital from the community	40
Of this 40 rereturned to the community	22
(Less than 4 months in hospital on their return)	
Still in the community	162
Returned for medical reasons	7
Returned to hospital from program	54
Number now on program	41

FIG. 1

The average length of hospitalization of this group is eight years. More than half the group are over forty years of age, with the oldest person placed in a full time job (and still going strong) being 66 years of age. Almost all of these individuals at one time or another during their hospitalization had a poor prognosis and were considered not feasible for rehabilitation. The jobs accepted by these individuals included the full range of skills in employment, from, for example, that of janitor to head of marketing research.

Last year the finance department of our hospital did a cost analysis of the member-employee program. The period covered was from Feb. 13, 1954 to June 29, 1957 and involved an analysis of 120 member employees discharged to jobs in the community. Estimated savings to the government was approximately $641,-263.00. This figure was arrived at by multiplying the number of days that these member-employees remained out of the hospital by 14.50, the cost per day for care and treatment and then deducting costs including 1) cost of subsistence and quarters, $57,760.45; 2) Member-employee salaries, $55,688.91; and 3) staff salaries of $29,066.02. A similar cost analysis is being planned after we have discharged 200 member-employees. We are confident the savings will go well over a million dollars. Furthermore, this figure does not include how much money is being returned to the government in taxes as a result of their becoming productive citizens.

There are many forces that contribute to the development of a well rounded and smooth functioning member-employee program of which the following are perhaps the most important:

1. A very strong physical medicine and rehabilitation service is paramount. If a patient does not do well in PMRS activities he cannot be expected to do well on the member-employee program which operates at a higher level and with increased stress and strain. The patient must demonstrate a capacity to function at progressively higher levels of activity before he can even be considered a candidate for member-employee status. This phenomenon of movement from lower level, or simpler activities, to higher levels, or more complex activities, is extremely important to patients. It provides patients with objective indices of progress and goal accomplishment. In this respect PMRS therapists must be cognizant of the role of work in the psychological economy of the individual, and they must be able to utilize such knowledge in furthering the rehabilitation process. In other words, they must understand the nature of psychodynamic needs as well as the importance of assessing the strengths and weaknesses of the individual in the sphere of work. Without a good PMRS program there is no member-employee program.
2. The member-employee supervisor must be a strong central significant figure. In this connection, it is essential that he have administrative, as well as therapeutic, control over the member-employee program. Interference with his autonomy of leadership would make it exceedingly difficult or virtually impossible to play the many different roles expected of him.
3. The member-employee culture is different from the patient culture. A member-employee is not expected to act like a patient. This culture's social codes, rituals, traditions, and expectations differ markedly from the patient culture. Social deviants generally do not adjust too well to the member-employee program.
4. A therapeutic community fosters an active member-employee program. In this community everybody is considered a therapist staff member and patient alike, and each individual is a potentially beneficial therapeutic force. The keynote is respect for the dignity and worth of the individual—"there is no such things as a human scrap heap," as Bernard Baruch once said.
5. Regularity of counseling sessions with the member-employee supervisor has many values. The member-employee is assured that he will get individual attention and will not get lost in the shuffle. Supportive therapy can continuously be constructively utilized. Through cooperative planning, sound occupational plans for the future can be crystallized.
6. Occupational placement is a fundamental goal. Member-employees are secure in the knowledge that

if their work adjustment is good on the program they will have a job lined up for them before they leave. The member-employee supervisor has developed many contacts in industry through personal visits to industrial establishments. Although other placement channels are utilized, placement through the personal efforts of the member-employee supervisor is most advantageous in terms of expediency and selective placement.

7. The advent of tranquilizing medication has sparked the expansion of the member-employee program. Response of patients to tranquilizing medication has brought individuals into our program who ordinarily would have been considered too ill for such a high level activity. 95 per cent of our member-employees are on tranquilizing medication. Failure to take the medication is tantamount to failure in the program. All of our failures in the past two years, who have returned from the program to the hospital or from the community to the hospital, have been primarily negligent in taking medication.

8. Foster home care is a powerful ally of the member-employee program. Over half of our member-employees who have been discharged have been placed in foster homes. Our success formula seems to be a job, following medical advice in taking medication, and placement in a foster home. Not one of our member-employees who possesses this three-fold combination have ever returned to the hospital from the community.

9. Follow-up supervision on the job by the member-employee supervisor is essential and is a standard operating procedure. Follow-up is conducted on a monthly basis for a minimum of six months. The first few months on the job are most critical and member-employees often need adjustment assistance. Assistance is available not only during the regularly scheduled visits of the member-employee supervisor but at anytime during the work life of the individual. Employers are favorably impressed by this service and feel greater security in the knowledge that it is always available. The member-employee supervisor spends 20 per cent of his time on placement and follow-up activities.

10. The ultimate success of the rehabilitation program depends upon our ability to extend the therapeutic community into the extramural community. The employer must become an important part of our therapeutic team. To do this successfully we must destroy or weaken employer resistance to hiring former mental patients and learn to tap the altrustic portion of his personality. It has been our experience that persistent efforts in this direction will pay great dividends.

It is the firm conviction of the author that a member-employee program should be an integral part of the rehabilitation program of every mental hospital. It provides the type of transistional experience that cannot be given by any other rehabilitation technique, namely the changing of role identity and work conditioning in a realistic social and work setting.

Psychological Concept—cont'd from p. 9

Human gait is an expansive motion, performed in the expectation that the leg brought forward will ultimately find solid ground. It is motion on credit. Confidence and timidity, elation and depression, stability and insecurity—all are expressed in gait.

Observations made in the two movies show that initially our patient walked as if *pushed,* as if he were *ice skating, leaned back, sideways, and led with one leg.* All these observations describe the fact that the patient *did not lift* his legs off the ground. He slid and skated, not even for a moment giving up his tentative contact with the ground. He could not move on credit, for credit results from confidence, stability and security. Seven months later he walked and *strode into* the world, *leaned forward,* and *lifted* his feet from the ground with each step. He had again become an upright man, he could again give credit, lifting his foot with the assurance that the ground would be there waiting for him. The change in gait resulted from a changed psychological attitude. The essence of the treatment was: The patient regained the upright posture; with this he regained his standing in the world, his self-esteem and his independence.

The author wishes to express his appreciation to the staff of Winter VA Hospital for its participation in this treatment program, particularly Richard Comstock, C.T. Acknowledgement is also made to Walter Mullens, C.T., James Watkins, C.T., and William Campbell, for their cooperation in this project.

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Research

There is a great need in our association for research in the problems involved in patient rehabilitation. The findings of such studies must be translated into programs in the hospital and in the community if the possibilities of more effective rehabilitation are to become actualities. Further work on techniques to determine effectiveness of our programs is needed. A study to determine which patients benefit from which type of activities or programs might be made by exposing experimental and control groups to a variety of different activities.

Structuring of research design in our association has been badly neglected. I would like to propose the following design in a procedure for the fostering of research as well as the establishment of a clearing agency to assure uniformity while offering assistance to the membership: The research committee should be composed of leaders in the various paramedical fields who have research experience. This group should be the clearing agency for all proposed research submitted by association members. After careful screening by the committee the individual may receive guidance and suggestions that will make the studies more significant. There is a need to urge members to use local universities in their areas to help in research studies.

I should like to indicate briefly, the nature of some of the problems which the committee must face in studying research problems in rehabilitation of patients. It should be noted that the following points on different levels of abstraction are of varying degrees of importance in evaluating programs.

1. The problem of specifying the degree of illness of the patient.
2. The problem of measuring change.
3. The problem of control groups and controlling variables.
4. The problem of interpreting data.
5. The problem of determining the effect of the research project on the problem undertaken for study. There is no escape from the laborious detour by the way of patient observation, experiment, and tryout of new treatment designs.

The research committee of our association is an important area where therapists can seek advice and help in the planning stages of their projects. Research will help our work to take on new meaning and exchange of information will improve our methods.

The Association for Physical and Mental Rehabilitation's research committee is composed of Paul Roland, chairman, PM&RS coordinator, VA Hospital, Indianapolis, Ind.; Carl Haven Young, Ed.D., University of California at Los Angeles; Dr. Leonard Ravitz, Department of Psychiatry, University of Pennsylvania; Dr. Richard Jenkins, Director, Evaluation Research Project, Veterans Administration; Joseph Van Schoick, Chief, Corrective Therapy, Veterans Administration; William Appell, Ph.D., VA Hospital, Chillicothe, Ohio; and John E. Davis, Jr., Ph.D., VA Hospital, Lexington, Ky.

The committee urges all association members to send in their research ideas for study. Projects already completed may be sent to the committee chairman for evaluation. They will then be forwarded to one of the specialists who will provide guidance and suggestions relative to the project. The membership is urged to use local universities within their areas for additional research help. The committee is in the process of organizing a research registry, and all members involved in research studies at present are urged to submit the name of the study and individuals working on the project to the chairman, research committee.

PAUL ROLAND, *Chairman*

CORRECTIVE THERAPIST HONORED AS 'CIVIL SERVANT OF THE YEAR'

Frank Delliquanti, Chief, Corrective Therapy, V.A. Hospital, Wilmington, Del., has been selected as the first recipient of an award as Delaware's "Civil Servant of the Year." The award, presented by the State Chamber of Commerce, was made in observance of the 75th anniversary of the federal civil service orgnization and consisted of an engraved clock and citation.

In citing Mr. Delliqaunti, the selection committee lauded his "outgoing personality which has enabled him to establish close rapport with his patients, inspiring them with motivation to work toward overcoming their disabilities." The committee stated, "Many of Mr. Delliquanti's patients are elderly and have had one or both legs amputated or are paralyzed on one side. Very often they are not so much interested in learning to use prosthetic devices or in learning to walk and do other daily activities. But Mr. Delliquanti's enthusiastic manner, persistent encouragement and a combination of joking and cajolery helps to give them a medical and physical 'lift' resulting in inspiration for them to put forth a great deal of effort toward their training and rehabilitation." The committee also cited "his work with tuberculosis patients, both before and after surgery, which in a great measure allays fears of the patients and permit him to teach them the proper exercises for recovery."

Mr. Delliquanti, a graduate of Penn State with a degree in physical education, served as a health and physical education director and athletic coach at Pittston, Pa., from 1935-43, and in the U. S. Navy rehabilitation program during WW II. He joined the VA staff at Wilmington in 1948. Mr. Delliquanti is married and has a 15-year old daughter. He is a member of the Association for Physical and Mental Rehabilitation and is at present, vice president of the Mid-Atlantic Chapter. He also serves on the Governor's Committee for Employment of the Physically Handicapped, State of Delaware.

"From Other Journals"

Unless noted otherwise, all abstracts have been prepared by Philip J. Rasch, Ph.D.

E. Gellhorn, "The Physiological Basis of Neuromuscular Relaxation." *AMA Archives of Internal Medicine,* 102:392-399, September, 1958.

The fundamental role of the hypothalamus in the emotional process has been established. The apparent parallelism between the state of excitability of the hypothalamus and emotional activity makes an investigation of the factors determining hypothalamic excitability a matter of importance for clinical medicine. The sympathetic division of the hypothalamus can be inhibited by increasing discharges from the sinoaortic baroreceptors or by the lessening of the proprioceptive impulses. The change in the state of the hypothalamus leads via the hypothalamic-cortical discharges to corresponding alterations in the state of excitability of the cerebral cortex. Jacobson showed that muscular relaxation diminishes emotional and mental activity. Kleitman demonstrated that prolonged wakefulnes depends on proprioceptive impulse. In the light of the present studies these findings appear due to the reduced excitability of the sympathetic division of the hypothalamus when propioceptive impulses are diminished.

E. A. Harris, "Exercise-Tolerance Tests." *Lancet,* 7043:409-411, 23 August 1958.

The tests proposed for clinical exercise-tolerance fall into three groups: (1) those based on ventilatory measurements; (2) those based on heart-rate; and (3) those based on oxygen consumption or oxygen debt. Measurements of ventilatory capacity are too subject to the patient's voluntary control, and the resting values do not necessarily apply to exercise. Pulse rate after exercise is probably related as much to peripheral vascular conditions, muscle tone, and posture as to cardio-pulmonary status; heart rate during exercise is difficult to measure and no satisfactory tests of this kind have been developed. Measurement of maximum oxygen uptake involves maximum effort and this is unsuitable for clinical purposes. Measurements of oxygen debt after exercise would probably repay further study and development. Composite indices are probably no more reliable than their individual components. It is clear that no clinical test of exercise-tolerance has yet been developed to the point of practical usefulness.

Patrick MacAuley, "Transposition of Pectorallis Major for Paralysis of Biceps Brachii." *Journal of the Irish Medical Association,* XLIII:275, September, 1958.

There are three basic methods of restoring voluntary flexion to the elbow joint when it has been lost as a result of poliomyelitis or of bronchial plexus injury. Transplant of the pectoralis major is the simplest, provides a line of pull which is direct and follows the course of the one replaced, and restores active supination. Steindler's proximal shift of the common flexor works well in supplementing any power of flexion already present, but is disappointing otherwise. It must be followed by transfer of the flexor carpi ulnaris if supination is to be restored. The result of Bunnell's transfer of the triceps is uncertain. It does not replace supination and does not give sufficient power.

Leon C. Edwards and J. Englebert Dunphy, "Wound Healing. I. Injury and Normal Repair." *New England Journal of Medicine,* 259:224-233, July 31, 1958.

Severe injury produces a widespread loss of important cellular constitutents. Healing normally begins in the face of a negative nitrogen balance. The local reaction to unspecified injury is acute inflammation. The restoration of form and strength to an injured part depends upon tissue migration and synthesis. The mode of repair in each tissue class depends mainly upon its ability to regenerate its own kind. The common result of injury is scar formation. There is evidence of a direct relationship between the acute inflammatory response and the initiation of the subsequent connective-tissue proliferation characteristic of repair. The epidermis is capable of swift and extensive regeneration, the new epidermis arising from existing epidermis and epidermis appendages. As the cellular exudation of acute inflammation subsides, the fibroblast becomes the wound's numerically dominant cell. The origin of proliferating fibroblasts is uncertain, but they proceed largely from the surrounding areolar tissue. After disposal of tissue debris, a clear fluid appears in the wound. An interpretation of its features has not been attempted, but it represents a step toward a biologic environment in which the embryonic fibroplasia of wound healing occurs. The ground substance takes up water and tends to change from a gel to a fluid, which enhances the passage of particulate matter. This provides a pathway between the healing wound and the rest of the body. Collagen fibers principally account for the restoration of tensile integrity to severed tissue. Collagen concentration and the tensile strength of a wound normally reach an initial maximum value in 12-14 days. Closure of an open soft-tissue wound depends in large measure upon the mobilization of the surrounding tissue rather than upon epidermal and connective-tissue regeneration. The principal mechanism may be one of push rather than of pull.

Editorial, "First Resposes to Local Infection." *Lancet,* 7048: 678-679, 27 September 1958.

How primary bacterial infections may be limited to the site in which the organisms first lodge and multiply is unknown. An infection of living bacteria can be limited and localized only if the bacteria are prevented from escaping and are killed on the spot. On the spot or nearby are phagocytes. Destructive antibody may be generated locally. Localization has been attributed by some to thrombotic plugs in efferent blood and lymphatic vessels. Observations suggest that the decisive period in which infection is limited precedes the classical early signs of acute inflammation in vascular tissues, and that these early signs are responses to the aftermath of infection.

G. A. McDonald and H. W. Fullerton, "Effect of Physical Activity on Increased Coagulability of Blood After Ingestion of High-Fat Meal." *Lancet,* 7047:600-601, 20 September 1958.

One factor which has a causal relationship to the increasing incidence of coronary atheroma and cardiac infarction may be the increase in dietary fat. Blood coagulability increases after the ingestion of fat. A general decline of physical activity has been conspicious in the past few years. It has been shown that the prevalence of coronary-artery disease is fairly closely related to physical activity, being highest for men in sedentary work. A study of 23 medical students showed that when a meal was followed by walking the acceleration of the recalcified-plasma-clotting time after the ingestion of fat was to a large extent abolished. If the shortening of this time can be regarded as indicating a greater tendency to fibrin formation *in vivo,* and if intravascular fibrin formation is the important factor leading to atheroma, it follows that physical activity may be important in preventing the development of atheroma. However, much physical activity at long intervals in sedentary life is unlikely to delay the progress of atheroma. Little activity during the week cannot be offset by several rounds of golf on the weekend.

F. A. Hellebrandt, "Application of the Overload Principle to Muscle Training in Man." *American Journal of Physical Medicine*, 37:278-283, October, 1958.

Application of the overload principle is obligatory if muscle performance is to be improved. If an individual desires to improve his strength, power, and endurance, he must put forth an all-out effort. The amount of work done per unit of time may be increased either by raising the cadence at which the exercise is performed, or by increasing the resistance against which the muscles shorten. Speed and load are mutually dependent variables. There is an optimal rhythm of working for exercise of every severity. Studies of the physiological rationale of muscle training require reliable tools for measuring performance, a rigorous control of all variables known to affect work output, and homogeneity in the general characteristics of the experimental subjects. Rivalry between subjects and knowledge of training results play significant roles in the mastery of a skill. When maximal effort is exerted against maximal resistance, fatigue develops quickly, accompanied by physical discomforts. Moderate exercise produces no symptoms. Light exercise is difficult because the attention tends to wander. When the cadence of exercise is increased to tempos in excess of the optimum both strength and endurance are increased to a striking degree. The rapidity with which the performance of muscle can be augmented suggests that a significant proportion of the end-result of systematic voluntary exercise is due to motor learning. Breakdown in muscular responses attributable to incoordination is not encountered among normal subjects. The expanding patterns evoked by overload stress are total synergies, so primitively integrated that the response remains always orderly.

Erling Asmussen and Marius Nielsen, "Pulmonary Ventilation and Effect of Oxygen Breathing in Heavy Exercise." *Acta Physiologica Scandinavica*, 43:365-378, 1958.

Pulmonary ventilation increases relatively more than metabolism during heavy muscular exercise. It has been shown that this effect is not due to a lowered arterial tension or to an increased acidity of the blood. When oxygen is added to the inspired air during heavy work, the ventilation is lowered. It is possible to partly explain this decrease as the result of an abolition of a hypoxic chemoreceptor drive, if it is assumed that the chemoreceptor impulses increase the sensitivity of the respiratory center towards the work stimulus. Even with this assumption it is difficult to completely explain the hyperventilation of heavy exercise and its abolition through oxygen breathing. It has been suggested that during an anaerobic work a substance is produced which has the effect of increasing the ventilation. During oxygen breathing the increased amount of physically dissolved oxygen may make the work less anaerobic, so that the decreased ventilation can be attributed at least partially to this cause. This substance cannot be lactic acid, because the changes in ventiltion occur much more rapidly than the changes in blood lactate level.

J. Axelsson and S. Thesleff, "Activation of the Contractile Mechanism in Striated Muscle." *Acta Physiologica Scandinavica*, 44:55-66, 1958.

The general tendency has been to consider a membrane potential change as an essential link in the activation of contractile muscle. In frog striated muscle alkaloid caffeine starts a process in the muscle membrane which causes muscular contraction. This effect is not mediated by a change in the resting potential or in the ionic permeability of the muscle membrane. The most likely explanation is that the drug combines with certain "active spots" in the cell membrane and causes the release of a process which by inward propagation activates the contractile mechanism. No indication has been obtained regarding the nature of this process. The fact that the amount of heat released by caffeine in a muscle closely corresponds to the amount liberated by a tetanic contraction suggests that the activation process started by caffeine is the same as that triggered by the action potential.

Editorial, "Joan of Arc." *The Practitioner*, 181:551-562, November, 1958.

The source of the visions and voices of Joan of Arc have been a matter of controversy. Professor John Butterfield and his wife have presented evidence suggesting that a tuberculoma in the left tempero-sphenoidal lobe was the responsible lesion. Bovine tuberculosis was rampant in those days, and as a child Joan had every chance of being infected. She had amenorrhea, which is a recognized complication of tuberculosis in adolescence, and the evidence of an examining physician suggests that she had a renal infection which might well have been tb. Her executioners reported that her entrails would not burn, which would not be surprising if there were heavy calcified lymph glands in the abdomen, the usual result of bovine tb. However, Joan's greatness cannot be attributed to organic disease alone. It was her courage, intelligence and leadership which distinguished her.

Bernard S. Schlessinger, Frederick H. Wilson, Jr., and Carrie B. Haven, "Influence of Exercise and Diet on the Blood Lipids of a Military Population." *School of Aviation Medicine*, USAF Report 59-6, October, 1958.

Blood samples were taken from 199 draftees at the beginning, middle and end of eight weeks of basic training. During this period the subjects were on a high fat diet and subjected to vigorous physical training. Changes observed included increases in weight, cholestoral, lipid phosphorous, and certain lipo-proteins. On the basis of diet and of weight changes, it would be anticipated that all lipid variables would increase. The fact that serum lipoproteins and the atherogenic index actually decreased was attributed to the beneficial effects of the physical training.

Ernest R. Hill, "Trick-Movements in Knee-Extensions." *Physiotherapy*, 44:137-138, May, 1958.

Treatment of any conditions affecting the knee joint will include quadriceps exercises. Trick movements enable the patient to achieve knee-extension without the quadriceps doing their share of the work. When the patient lies in bed the knee is not fully extended, owing to the calcaneus and the posterior muscles being in contact with the surface on which the patient lies. Static muscle contractions do not work the quadriceps to the extent required. Actually the femur may be pulled down by the hamstrings and the oblique posterior ligament, thus extending the knee. Lifting of the heel produces an apparently more active extension, but the action may be performed by hip-flexion. In the sitting position dorsi-flexion of the foot may transmit a pull to the gastrocnemius and plantaris muscles. Working with reversed origin, they may pull the femur backward. In leg-raising from the sitting position the fixation and stabilization of the knee-joint may be partially accomplished by the gastrocnemius and plantars, working eccentrically with reversed origin. These movements can be excluded by raising the thigh with a sandbag and thus increasing the degree of flexion at the knee joint to such an extent that only a more forceful contraction of the quadriceps will raise the leg from its support. This will also obviate the possibility of leg raising by hip flexion.

Editorial, "The Origin of Species." *British Medical Journal*, 5086: 1527-28, June 28, 1958.

Charles Darwin was in a sense the founder of scientific biology. By establishing the fact of evolution and how it occurred, Darwin led to a realization of the animal origins of mankind. This removed all inhibitions from the study of man and the last intellectual barriers to the application of scientific method. The impetus given by Darwin to comparative anatomy led to a partial neglect of physiology and other experimental approaches to living material. However, Darwin's ideas live and have relevance to present-day inquiry. We have not yet extracted from his work all that can be of use to us.

Dante Penaloza, *et al.*, "Early Electrocardiographic Changes Produced by Ascending to High Altitudes." *American Heart Journal*, 58:493-500, October, 1958.

Electrocardiographic changes produced in 13 normal men between the ages of 17 and 21 by the ascent from sea level to 14,900 feet were observed. No significant variation of heart rate was observed immediately after arrival at high altitude, but the rate increased 12 hours later and reached a maximum between four and eight days. Later it decreased and when the subjects returned to sea level rates similar to initial values were obtained after four to eight days. Slight variations of P-R and Q-T intervals related to the rate changes were observed. No significant change of QRS interval was found. Variations in the P wave apparently related to a wandering pacemaker in the sinoatrial node were recorded. This was probably determined by modifications of the vagal tone. Changes in the QRS complex were explained by variations in the cardiac position. Abnormal contours in the T wave in the right precordial suggest subacute overloading of the right ventricle produced by modifcations of the pulmonary circulation in an environment of anoxic anoxia.

Arne Carlsten *et al.*, "Cardiovascular Effects of Direct Stimulation of the Carotid Sinus Nerve in Man." *Acta Physiologica Scandinavica*, 44:138-145, 1958.

Direct stimulation of the carotid sinus nerve was performed in five cases during operations for tumors of the neck. A prompt fall in mean blood pressure, pulse amplitude, and heart rate resulted. Concomitantly there was a marked fall in resistance to blood flow within the forearm vascular bed. The respiratory rate was only slightly changed. The fall in blood pressure probably resulted from a decreased stroke volume, as the heart rate decreased simultaneously, and there was evidence that the peripheral resistance was reduced. The reduced stroke volume must be a consequence of generalized reflex inhibition of sympathetic tone.

Richard Holmes and Philip J. Rasch, "Effect of Exercise on Number of Myofibrils per Fiber in Sartorius Muscle of the Rat." *American Journal of Physiology*, 195:50-52, October, 1958.

Morpurgo reported that exercise produced muscular hypertrophy but did not increase the number of myofibrils. This conclusion has recently been questioned by anatomists. A group of rats was exercised and cross sections of tissue were removed from the right sartorius at seven equally spaced levels. When compared with unexercised controls there were no stastiscally significant differences in the number of myofibrils at any level. However, there appeared to be greater numbers of myofibrils per fiber near the origin and insertion than in the center of the exercised muscle, whereas this tendency was not discernable in the controls.

Chapter Activities

Eastern States Chapter

The Eastern States Chapter held a joint conference with New York chapters of AART and AMRDC at the Institute of Physical Medicine and Rehabilitation, New York on Nov. 7. Dr. Joseph Rogoff, Chief, PM&RS, Brooklyn Jewish Chronic Disease Hospital, acted as chairman of the clinical session and spoke on the subject, "Physiology of Aging and its Effect on Employability." Other speakers included Reuben J. Margolin, Ph.D., Brockton VAH, who discussed member-employee programs, and Victor Ruderman, Ph.D., who spoke on the role of the counseling psychologist. Willis P. Denny, president of the national organization, attended the business meeting and brought the membership up to date on recent developments within the association.

New England Chapter

The New England Chapter held a clinical conference on physical fitness, physical training, rehabilitation and research at the VA Hospital, Bedford, Mass., on January 16. Dr. L. J. Reyna, research consultant at Boston University, acted as moderator for a panel of speakers which included Dr. Peter V. Karpovich and Dr. Cecil Morgan, Springfield College; Dr. Max Asa, Conn. State Veterans Hospital, Rocky Hill, Conn. and Dr. Delilah Reimer, Chief, PM&R Service, of the host hospital.

California Chapter

The California Chapter is making plans to share in the meeting of the therapeutic section of the State AHPER at its annual meeting in Los Angeles, March 21-24. The third annual chapter conference is tentatively slated for May at California State Polytechnic Institute in San Luis Obispo.

Chapter Presidents

NEW ENGLAND — Charles Bader, VAC, Togus, Maine.
EASTERN STATES — John Baldino, 2120 E. Tremont Avenue, Bronx 62, N. Y.
WESTERN, N. Y. — Paul E. Daniels, 168 Buffalo St., Canandaigua, N. Y.
MIDDLE ATLANTIC — Durwood H. Evans, 584 Firethorn Drive, Monroeville, Pa.
SOUTHEASTERN — William Redden, VA Hospital, Lake City, Fla.
TEXAS-LOUISIANA — J. Boyce Nall, 1714 South 15th Street, Temple, Texas.
OHIO-KY.-IND. — John Murphy, Route 3, Chilicothe, Ohio.
GRAND CANYON—Henry White, 1035 Crandall Ave., Salt Lake City, Utah.
CALIFORNIA — Richard Fowler, 3586 Tilden Ave., Los Angeles, 34, Calif.
HEART OF AMERICA — W. R. Mullens, 1205 Watson, Topeka, Kansas.
NORTHWESTERN AREA — Everett C. Converse, Route 4, Box 75, Sherwood, Oregon.
MID-WESTERN — Carl Purcell, 2212 South 9th Ave., Broadview, Ill.

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Book Reviews

"Lumbar Disc Lesions," Second Edition, by J. R. Armstrong (Baltimore: Williams & Wilkins Co., 244 pp., 1958, $12.00).

In a text that is well organized, well illustrated, and clearly written throughout, the viewpoint of a British orthopaedic surgeon regarding lumbar disc lesions is presented. The reader is given a clear picture of lumbar disc anatomy, function, and pathology, as well as the clinical picture, differential diagnosis and operative treatment of its lesions. For this information, Armstrong's work is very well worth reviewing or studying. Surprisingly, no reference is made to electromyography as a diagnostic tool.

Physiotherapy is dismissed as of temporary value. The barest passing reference is made to exercises, this being limited to mention of gentle *extension* exercises for strengthening the erector spinae. The author inveighs against manipulation and traction. In the area of conservative therapy, prolonged immobilization and rest are the writer's minstay for all stages of the disc lesion. Unfortunately, no satisfactory documentation is offered, either pro or con, in this area. A more complete index would be a service to the reader.

DJS

"Sports Injuries; Their Prevention and Treatment," by Donald F. Featherstone. (Bristol: John Wright & Sons Ltd., 1957. The Williams & Wilkins Co., Baltimore, exclusive U.S. agents. 195 pp. $7.50)

This appears to be a revised and enlarged version of the author's earlier *Sports Injuries Manual*, reviewed in this *Journal* in the November-December, 1956 issue, although the preface makes no reference to that book. Since it is of British origin (which presumably accounts for its surprisingly high price), certain semantic difficulties arise: "Football," for instance, does not refer to the type of game with which Americans are most familiar. The text is illustrated by photographs and is indexed, but the bibliographic apparatus is extremely limited.

In essence the volume represents a physical therapist's view of the treatment of athletic injuries. Within the narrow limits of this field the text is quite satisfactory and may be recommended to the trainer. However, the recent appearance of Morehouse and Rasch's *Scientific Basis of Athletic Training*, reviewed in this *Journal* in the May-June, 1958 issue, has introduced the "whole man" concept, characteristic of corrective therapy, into athletic training and has rendered books of this type obselete except for reference purposes.

WRP

"Sanity, Unheard of," by Hugh Woodward. (Victoria, B. C.: The Sumas Publishing Company Limited, 1958. 109 pp. $3.00)

Man, says the author, is insane, rendered so by his evolutionary position. Fear of material, social, emotional, and intellectual insecurity dominates his life. Hurry, resentment, anger, jealousy, and similar states are its offspring. The animal is afraid only while attack actually threatens; man's ability to remember the past and anticipate the future keep him in a state of fear at all time. Only when man acts spontaneously, without self-consciousness, is he in a state of being. The solution is then obvious: man should surrender himself to the self that is within him. All of this was said long ago: "The kingdom of God is within you." To this reader, at least, *Sanity, Unheard of* fails to communicate. He would recommend that those seriously interested in this subject try Nicoll's *The Mark* instead.

PJR

"Seminar on Rehabilitation of the Physically Handicapped for Participants from Asia and The Far East." (New York: United Nations, 1958. 158 pp. Paper.)

The idea of services for the handicapped is only beginning to gain acceptance in Asia. The United Nations Technical Assistance Administration held a seminar at Solo, Indonesia, from 26 August to 7 September 1957 to provide an opportunity for a discussion of the principles and methods of modern rehabilitation of the orthopedically handicapped. This booklet presents some of the lectures delivered by the various experts, summaries of panel discussions, and of discussions of specific subjects suggested by the participants, a list of participants, a description of activities of the United Nations in rehabilitation, etc. Most of the lecture material presented, of course, was the sort of thing with which readers of this *Journal* are thoroughly familiar, and the principal interest of the booklet to them will be for the picture it gives of the status of rehabilitation in Asia. It is rather startling to note that Dr. Alan T. Roberts, United Nations WVF Expert, spoke on "The Contribution of the Medical Profession, Physical Therapists, Occupational Therapists and Limb Fitters," and that Mr. L. Garland, United Nations WVF Rehabilitation Adviser in Burma, spoke on physical and occupational therapists in rehabilitation. The reader is left to wonder at the apparent unfamiliarity of these experts with corrective therapy.

PJR

"The Cerebral-Palsied Child," by Winthrop M. Phelps, Thomas W. Hopkins, and Robert Cousins. (New York: Simon and Schuster, 1958. 237 pp. $3.95).

Written for the parents of the cerebral palsied child, this book depicts the situation in a direct, factual manner . . . "based upon hard and true facts of cerebral palsy . . . it does not try to offer hope except where it honestly and reasonably can." The what and the why of the disability are first presented, with a discussion of the associated physical defects. The major portion of the book deals with the general basic treatment of the child; then, in more detail, the many and varied aspects related to speech, activities in the home, school and society, emotional problems, etc. The final chapter deals with the child in later life and the preparations to be made in planning toward it. Parents, relatives, and friends can benefit immeasurably by gaining understanding and by taking a positive approach toward turning the shocking and unhappy reality into something as near a victory as is possible under the circumstances.

MLB

"The Judo Instructor," by M. G. Harvey. (New York: Emerson Books, Inc., 1958. 121 pp. $2.50)

Of the making of books on judo there is no apparent end. The author of this one comments that during the Twentieth Century probably sixty or seventy texts on the subject were published in English. Why then another? His purpose is to set forth the basic skills necessary to enable the student to attain a brown belt. In actuality, however, he includes quite a bit of material not applicable to this grade. The throws are carefully broken down and each movement described in detail. A very useful point is the description of the breakfall to be used by the thrown man. The weakness of the text lies in its failure to present the counter techniques to each attack. The book is profusely illustrated with line drawings. It would be definitely useful to the beginner who is seriously interested in mastering the art and is willing to study its technique between actual lessons. For defensive play, however, he will need a text such as Takagaki and Sharp's *The Techniques of Judo*, reviewed in the March-April, 1958 issue of this *Journal*.

PJR

"Social Psychiatry in Action—A Therapeutic Community," by Harry A. Wilmer. (Springfield, Ill.: Charles C. Thomas, 1958. 373 pp. $8.75)

In this book Wilmer reports upon his experiences in conducting a therapeutic community while in charge of the psychiatric admission ward at the Naval Hospital at Oakland, California. His observations and conclusions derive from experimental data based upon group interreactions between patients, psychiatrist, and ward personnel. The role of the doctor and associated ward personnel in the therapeutic setting, tranquilizing medications, and pros and cons of the use of the seclusion room are among the areas covered. Throughout, the major emphasis is on the analysis of inter-reactions as observed in the experimental setting of the community meeting. It is on this data that Wilmer bases his theories regarding methodology affecting the recoverability of patients. The author's premise that ward group therapy (including both psychotics and neurotics) with minimal interruption by the staff may hasten the recovery phases reinforced by his published data. That a ward contains both neurotics and psychotics apparently accelerates rather than diminishes the degree of recoverability.

Any member of a discipline concerned with the treatment of the mentally ill in a therapeutic community will find this book to be a valuable reference. With today's dearth of psychiatrists it becomes necessary for ward personnel and patients to become oriented to the dynamics of group inter-relationships. Wilmer's experimental data opens a field of research which should be continued in the wards of the mental health facilities and day hospitals, as well as on the general medical wards, where the psychophysiologic reactions could be made available for study in a dynamically oriented therapeutic community. This approach may well be one of the major advances in psychotherapy and should be further studied by the psychiatrists and members of allied disciplines. Included are multiple charts and diagrams, primary and secondary bibliographies, appendices, and index.

DCL

Therapeutic Uses of Adhesive Tape, Second Edition. (New Brunswick: Johnson & Johnson, 1958. 130 pp. Free.)

Years ago every trainer's book shelf held a copy of Glimstead's *Adhesive Plaster Bandaging in Athletics*. Apparently it has since been replaced by *Therapeutic Uses of Adhesive Tape*, a text directed more at the physician and surgeon than at the trainer. As the writer can testify from personal experience, doctors who have not had experience as team physicians can seldom apply neat and functional taping. Study of this profusely illustrated booklet should make it possible for anyone to tape well. It is, of course, designed to publicize Johnson & Johnson's products, but the advertising which it contains is dignified and unobtrusive. Discussion of such subjects as skin irritation resulting from the use of adhesive tape indicates that medical considerations have not been sacrificed to possible profit. This is an example of institutional advertising at its best, and the result is a booklet of value to everyone using the product described.

PJR

Selected Reading Lists on Mental Hospitals, edited by Charles E. Goshen. (Washington, D.C.: American Psychiatric Association, 1958. 69 pp. Paper. $1.00)

As the title indicates, this is a selected reading list on mental hospitals. The editor seems to be unfamiliar with the *Journal of the Association for Physical and Mental Rehabilitation.*

PJR

"Das Klappsche Kriechverfahren," (The Klapp Crawling Method), by Dr. Bernhard Klapp. (Stuttgart: Georg Thieme Verlag, 1958. In the USA and Canada: Intercontinental Medical Book Corp., New York 16, N. Y. 80 pp. $3.20)

Dr. Klapp describes his 50 years of experience in the use of crawling exercises and activities in the treatment of children and adults afflicted with different types of scolioses, and other "thorax deformities." The book is divided into two parts. In the initial section he suggests employing the specific exercises described, not only as rehabilitative measures but also as preventive measures. He further discusses the anatomical basis of good and bad postures and the different causes of deformities of the spinal column. The author distinguishes seven different groups of scolioses on an etiological basis: 1) Congenital; 2) Caused by diseases such as TB and rickets; 3) Amputations, trauma, one leg shorter, etc.; 4) Bad posture habits in general or in particular occupations such as mining or watchmaking; 5) Paralyses; 6) Cicatricial, scars of outside and-or inside tissues; 7) Pain, such as in sciatica. He then describes the diagnostic, therapeutic and prophylactic possibilities of his method.

For his prescribed exercises Dr. Klapp has designed protective pads for hands, knees and toes of patients. A short discussion of other diseases and deformities of the spinal column ends the first and theoretical part of the book. In the second section, written in collaboration with Ella Biederbeck and Ingeborg Hess, both teachers at the college for corrective therapists and former students of Dr. Klapp, are presented 116 illustrations, most of them photos along with precise instructions for pertinent exercises, activities and applied games. This section constitutes an excellent demonstration of the treatment phase of this apparently highly effective method.

R K

"School Health Program," by Jesse Helen Haag. (New York: Henry Holt and Company, 1958. 553 pp.)

This text is an orientation to current developments in the total school health program. It treats such subjects as school health services, safe and healthful school environment, school nutrition, community resources, health of school personnel, school day in relationship to the pupil's total health, health and safety instruction and organization and administration of the school health program. The teacher's role is detailed as the fundamental function while community volunteer health services are stressed and explained as important contributions to the total educational effort. The services of the Association For Physical and Mental Rehabilitation to a progressive school health program through prescribed activities of exercise and self care including the social and psychological elements in physical education are discussed along with the general types of activities employed such as self care, functional ambulation, conditioning exercises and resocialization activities. This text provides a most comprehensive treatment of an important development in the professional progress of health education.

JED

"Twenty-Sixth Annual Survey of Football Fatalities," by Floyd R. Eastwood, et. al. (Hanover: American Football Coaches Association, n. d. 13 pp. Paper. Free)

Sixteen fatalities were directly associated with football during the fall of 1957, and five more were indirectly attributable to the game. It is noted that the percentage of deaths from traumatic blows to the head has steadily increased since 1931, indicating that continued research and development of helmets is vitally necessary. Eight specific recommendations for the reduction of fatalities are listed. These annual reports are essential information for anyone interested in sports medicine.

PJR

"First Aid Afloat", by Paul B. Sheldon. Revised edition. (New York: Yachting Publishing Corporation, 1958. 56 pp. Paper. $1.00)

This is a revised and enlarged edition of the text originally reviewed here, January-February, 1958. Instructions on assembling a hypodermic syringe, preparation of plaster of Paris splints, and the technique of mouth-to-mouth breathing are typical of the material which has been added. Numerous new illustrations give clarity to the presentation, and an index is now included. The rewriting is so extensive that in effect this is a new book and those who have the first edition should not hesitate about replacing it with this revision. As before, it is printed on water resistant paper and is an essential item for the bookshelf of every deep water sailor.

PJR

BOOKS RECEIVED

Third Annual Bibliography of Completed Research in Health, Physical Education and Recreation. (Washington, D.C.: Executive Offices, AAHPER, October, 1958. 24 pp. Paper. $1.00)

Covers research reported between September 1, 1956, and August 31, 1957.

FRESCO. (Detroit: University of Detroit, Spring, 1958. 68 pp. Paper. Free.)

Howard Phillips Lovecraft Memorial Symposium.

Health and Physical Education Microcard Bulletin. (Eugene: School of Health and Physical Education, University of Oregon, 1 October 1958. 38 pp. Paper. Free)

Most recent edition of this useful guide.

Certification of School Librarians, by Mary Helen Mahar. Bulletin 1958, No. 12, U. S. Department of Health, Education, and Welfare. (Washington, D. C.: Government Printing Office, 1958. 73 pp. Paper. $.30)

A compilation of state requirements for 1958.

Historic Cookery, by Fabiola C. Gilbert. (State College, N. M.: New Mexico College of Agricultural and Mechanic Arts, August, 1958. Circular 281. 44 pp. Paper. Free.)

Recipes for typical New Mexican foods.

News and Comments

NEW DEVICE MAY REPLACE BRAILLE

Development of a new device with which the blind can read ordinary printed material such as books and magazines has been reported by the Veterans Administration. The portable unit, called an "aural reading machine," was designed and is being evaluated by the Battelle Memorial Institute of Columbus, Ohio, under VA contract.

A scientific conference, sponsored by VA and attended by researchers who aided in development of the machine, was held at the National Academy of Sciences in Washington, D. C., September 17.

At the present stage of development of the reader, the sounds it produces do not resemble those of speech but are patterns of musical tones similar to chords played on an organ. By interpreting these tones, trained users ultimately should attain a reading speed of from 15 to 30 words per minute. Advantage of the machine over Braille is that the blind user can read material in normal print, including typewritten business correspondence. It will offer the blind new ability for the reading demands of office work and schooling.

The Battelle reader is about the size and shape of a portable radio. Weighing about 9 pounds and housed in a wooden case measuring about 7 by 9 by 8 inches, it has knobs for volume, light intensity, and the electrical power switch.

The machine has three essential parts—a small instrument called a probe which is held in the hand and moved over the printed material to be read, a chassis containing transistorized oscillators and an amplifier, and earphones through which the user listens.

The probe contains two tiny lights and a lens that projects an image of the printed letter upon a row of photocells. Each photocell, when it "sees" black, acts like the key of an electric organ to turn on an oscillator in the chassis to generate a specific pitch proportional to the height of the black portion of the letter "seen." These pitches are translated to sound patterns by the earphones.

Only five prototype models of the reader have been made, and further development of both the device and training methods will be required before quantity production is advisable. If further development justifies, VA hopes to be able to furnish the readers to blinded veterans for their home use within the next few years.

Blind persons, chiefly students and faculty members from the Ohio State School for the Blind at Columbus, have been trained to interpret sounds of the Battelle machine during the past year. Each student in the participating group received about 18 hours of instruction on the device, following preliminary training in interpreting tape-recorded sounds of the machine.

Recognition of the tape-recorded sound patterns corresponding to 145 different sentences was learned fairly readily, but the complex operation of manually rolling the probe along the line of print while interpreting the tone patterns will require considerable further practice before routine use. Plans for reading machines have been in the making for many years.

The VA reading machine project reached the "conference" stage four years ago when the agency sponsored the first of a series of meetings of the nation's research experts in this field. Construction of the first Battelle prototype model was begun in 1957.

The meetings have resulted in a broad program of VA contract research on various types of advanced reading machines for the blind. These range from relatively simple, low-cost, portable units like the Battelle machine to far more elaborate machines to produce speech-like sounds and perhaps ultimately "machine English."

SPANISH-AMERICAN WAR VETS AMAZE DOCTORS

A group of lively 80-year-old Massachusetts veterans is amazing Veterans Administration doctors who are trying to learn the secret of the oldsters' long life and vitality. Dr. Thomas J. Quigley, director of VA's outpatient clinic in Boston, said 160 of the octogenarians have been examined and studied there to date and they appear 20 to 25 years younger than their actual age. Spanish-American War veterans, they seem typical of some 1600 remaining veterans of that war living in the Commonwealth of Massachusetts, Dr. Quigley said.

According to estimates based on mortality tables, and on life-span increases due to modern medicine, about 500 Massachusetts veterans of the Spanish-American War should be alive today, he explained.

VA doctors are probing the "why" of their long life in search of "leads" to the treatment and care of all aging veterans as well as non-veterans. The Boston clinic is studying in detail the physical and emotional condition, diet, history, and life circumstances of Massachusetts Spanish-American War "youngsters."

The research team is headed by Dr. James Cummins, a specialist in problems of the aging. Dr. Cummins also serves on the staff of the Peter Bent Brigham Hospital at Boston.

ASSOCIATION SPONSORING A PROGRAM AT AHPER CONVENTION

The Association for Physical and Mental Rehabilitation will sponsor a clinical and educational session during the covention of the American Association for Health, Physical Education and Recreation, with whom it is affiliated. The program, developed by Dr. Carl Haven Young, Professor of Physical Education at the Univ. of California, Los Angeles and First Vice President of APMR, is scheduled for April 1 from 8:30 a.m. to 10:00 a.m. at the convention site in Portland, Oregon.

Everett Converse, President of APMR's Northwestern Area Chapter, will act as chairman with Walter Walkord acting as recording secretary. The following speakers and their topics have been announced for the program under the general heading, "Career Opportunities in Corrective Therapy: an Extending Orbit of Physical Education."

"Challenges in the Corrective Therapy Profession"—Carl Haven Young, Ed.D.

"Relationships in Adapted Physical Education and Corrective Therapy"—H. Harrison Clarke, Ph. D., Professor of Physical Education, Univ. of Oregon.

"The Role of the Corrective Therapist in the Hospital"—Everett W. Fowlks, M.D., Chief, PM&RS, V.A. Hospital, Portland, Oreg.

"Utilizing Medical Resources in Preparation of Adapted and Corrective Therapists"—Arthur C. Jones, M.D., Portland, Ore., President, American Congress of Physical Medicine and Rehabilitation.

Panel Discussion—"Sources and Resources in the Recruitment of Corrective Therapists."

All members of APMR and interested persons are cordially invited to attend the program.

ORAL ANTI-DIABETIC MEDICATION TO BE TESTED

Effectiveness of two of the newer antidiabetic pills will be tested by the Veterans Administration in a large-scale cooperative study, the agency has announced. The project, just getting under way at eight VA hospitals, is aimed at learning to what extent these drugs given by mouth can replace daily insulin injections on a long-term basis for persons with diabetes. The compounds are tolbutamide, the first widely used antidiabetic tablet, and chlorpropamide which became generally available to doctors about two months ago.

Dr. Edward Dunner, chief of the VA clinical studies division in Washington, D. C., said although much has been learned about the early results of administration of the compounds, more information is needed about their effects over a considerable period of time. Some 400 VA patients will receive the medication twice daily at 12-hour intervals for a minimum of eight months. Chairman of the study is Dr. Grosvenor W. Bissell, chief of the medical service at the Buffalo, N. Y., VA hospital.

The other participating VA hospitals are located in the Bronx, N. Y.; Dallas, Tex.; Martinsburg, West Va.; Memphis, Tenn.; Pittsburgh (VA general medical and surgical hospital); Topeka, Kans., and Washignton, D. C.

The National Institutes of Health are represented in the study by a member on the executive committee for the project. NIH also will perform special laboratory tests for the research.

VA WILL INVESTIGATE BACK TROUBLE

Aching backs are the subject of a new Veterans Administration study to find how this common ailment begins and the best means of treatment for it. VA is interested in back trouble caused by the "slipped disc"—actually a rupture of one of the round cushions of cartilage that lie between the vertebrae or bones of the spinal column.

Dr. Lyndon Lee Jr., who coordinates this study for VA in Washington, said the agency wants to know what kind of people suffer these so-called "slipped discs," under what circumstances the condition occurs, and which of the available treatment methods produce the best results. It may be that persons with unusual tissues, those doing certain kinds of work, or those especially susceptible to certain general categories of medical disorders are more likely to have ruptured discs than are others, he explained.

Military medical records maintained by the National Research Council and VA medical records will be used to study activities and medical history of veterans who have developed the condition during the past 20 years, Dr. Lee said. A representative group of these veterans will be allowed to come to VA hospitals for rechecks, so that VA orthopedic specialists and neurosurgeons can evaluate the results of treatment given previously. Dr. Lee said the study will enable VA doctors to compare the long-term results of different kinds of surgery and of nonoperative management for ruptured discs.

The treatments may include use of non-surgical measures, such as massage, heat, rest, and braces, or surgery to remove the ruptured disc and on occasion fix or fuse a segment of the spine, he said. As the study progresses, findings helpful as guides to treatment and prevention of the condition will be used for VA patients and will be made available to the medical profession generally.

The VA hospitals to participate in the study have not yet been chosen. Consultants for the study are Dr. Barnes Woodhall of Duke University and Dr. Harold Sofield of Western Reserve Medical School.

VA ANNOUNCES DOMICILIARY DIRECTOR

Appointment of Dr. Michael H. Travers, manager of the Veterans Administration hospital at Fort Wayne, Ind., as director of domiciliary homes for VA in Washington, D. C., has been announced by the agency today.

POLIO VICTIM OPERATES HAM RADIO STATION

A heart-warming blend of hospital services and volunteer activity has helped to set up what may be the most unusual "ham" radio station anywhere. Proud owner of the amateur station is Dale H. Engler, 35-year-old polio patient who operates station K9GHT from Ward 9, Wood Veterans Administartion center near Milwaukee, Wis., despite the fact he has to spend most of his time in an iron lung.

Although he can move only his right hand, he manages to operate the station from 6 to 8 hours a day. During this time he uses a portable respirator. He operates his station only during the daytime because the frequencies aren't too crowded and he gets better response, he explained.

Engler, a World War II Navy veteran who participated in five Pacific Theater invasions, was hospitalized five years ago, but didn't become attracted to the small scale radio operation until two years ago.

"I got interested by listening to short wave radio," he said.

That was all the voluntary organizations that serve Wood needed to hear, and they provided the help of volunteers with radio backgrounds. The volunteers arranged with nearby radio clubs to help him secure and set up radio apparatus. Recreation personnel and manual arts therapists at the hospital started Dale on radio projects. The hospital librarian planned a systematic study program, utilizing books and pamphlets from the patients' library.

During his broadcasting experiences, Engler has contacted people all over the world, including every country in Europe, parts of South America and even the North Pole region where a Canadian-United States weather station is located on Prince Patrick Island.

"A guy can't believe his ears when listening to someone from the Far North talk about shooting wolves," he chuckled.

"What is also truly amazing," Engler said, "are the volunteers from Milwaukee and West Allis who opened this radio world for me. I could 'send' all year on my set and still not tell how wonderful they and the hospital folks have been to me."

VETERAN POPULATION DECREASING

For the first time since the days of World War II the estimated number of veterans in civilian life is showing a consistent downward trend according to Sumner G. Whittier, Administrator of Veterans Affairs. There were an estimated 22,723,000 veterans in civil life on September 30, 1958.

Increasing steadily as the servicemen of, first, World War II and then of the Korean Conflict returned from the ranks of the military to civilian pursuits, the number of veterans in the nation reached an all-time high of 22,735,000 in March, 1958. Up until that time, the number of servicemen becoming veterans during the average month exceeded the number of veterans of all wars who died each month, or who returned to active duty. The drop to 22,723,000 on September 30 marked the sixth consecutive month the total veteran population had shown a decrease.

The total drop during the 6-month period was 12,000 and was strong indication that, after 19 years of increase, the number of war veterans in the nation was on a downward trend.

Barring another war, the decline will continue without interruption, the Administrator pointed out, unless there should be an unforseen increase in the discharge rate of Korean Conflict veterans from the armed forces.

The September 30 breakdown of veterans shows that 4,463,000 were veterans of the Korean Conflict alone; 15,274,000 saw service in World War II; 2,852,000 were veterans of World War I and 134,000 are veterans of all other wars including the Spanish-American War, various Indian Wars and the regular establishment.

The ages of America's veterans in civil life range from well over 100 for the two surviving Confederate veterans to an average age of 27-plus for Korean Conflict veterans with no service in World War II. The average age of Spanish-American veterans is approximately 81; of World War I veterans, more than 64, and for World War II veterans, more than 39.

Projections into the future—estimating discharges of war veterans from service and deaths to continue at presently expected rates—indicate 21,549,000 war veterans remaining by 1965; 20,531,000 by 1970, and 19,141,000 by 1975. A drop to the December 7, 1941, veteran population level of 4,429,000 is expected by about the year 2008.

DR. GANTT TO HEAD PERRY POINT RESEARCH

The appointment of Dr. W. Horsley Gantt, associate professor of psychiatry and director of the Pavlovian Laboratories, Johns Hopkins Hospital, as chief investigator at the psychophysiologic research laboratories of the Veterans Administration hospital at Perry Point, Maryland, has been recently announced by Dr. Lee G. Sewall, manager of the Perry Point VA hospital.

The psychophysiologic laboratories are engaged in a continuing program of research on the biochemical and behavioral aspects of mental and physical disease. Recently remodelled facilities include laboratories in biochemistry, surgery, animal behavior and human behavior.

Dr. Gantt is an international figure in objective psychiatry, an authority on conditional reflex research and the founder and president of the Pavlovian Society of America. He served with President Herbert Hoover in relief work in Russia following World War I, and it was at this time that Dr. Gantt began his studies with Professor Ivan Pavlov at his laboratories in Leningrad.

Dr. Gantt also has worked in the clinics at University College Hospital, London, and in brain physiology at the Hirnforschung Institute in Berlin under Professor Oskar Vogt. Dr. Gantt joined the faculty of Johns Hopkins Hospital in 1929, at the invitation of the late Dr. Adolph Meyer, and has continued an active program of both research and teaching at this location until the present time. Over 300 publications have resulted from research performed in his laboratory. These have covered topics in such diverse areas as brain function, higher mental processes, psychopharmacology of drugs, and international medicine.

Future research activities of the Perry Point laboratories will include studies in the area of cardiac disorders, perception and learning in man and animal, and the psychophysiology of the autonomic nervous system in normal and disordered states.

BLIND FOR FIFTEEN YEARS, HE FUNCTIONS AS STAFF PSYCHOLOGIST

Dr. Stanley P. Zarlock, staff psychologist at the Veterans Administration hospital at Lexington, Ky., believes a disabled person should make a catalog of the abilities he possesses, select a field of work in accordance with those abilities, and try to forget his disabilities. Dr. Zarlock has been blind since an industrial accident at age 19. "Lack of vision although inconvenient is not an obstacle to me in my work," he states.

Dr. Zarlock works with the patients on his ward by counseling with them, discussing their problems and giving help toward finding solutions.

Born and reared in Buffalo, N. Y., he received his Ph.D. degree from the University of Buffalo in 1958 and psychology training at the VA hospital in Buffalo. He is 34 years of age and married.

"The question of my blindness never came up in connection with employment as a serious work problem, and that was gratifying," he said. "I have found no reluctance or hesitation on the part of the staff people in accepting me."

Before undertaking his studies in psychology, Dr. Zarlock received training at the New York State School for the Blind at Batavia, from which he was graduated in 1948.

PSYCHOLOGISTS DEVELOP 'PROBLEM SOLVER' FOR NP PATIENTS

Encouraging results in use of a "problem-solving" apparatus as an aid to treatment of mentally ill patients have been reported by the Battle Creek, Mich., VAH. By offering simple problems in mechanics, the device challenges withdrawn patients to enter into activities and communicate with each other, VA said. Research with the apparatus was conducted by Dr. Stewart G. Armitage, chief of the hospital's psychology service, and Dr. Gerald F. King, assistant professor of psychology at Michigan State University.

Dr. Armitage and Dr. King worked with severely ill mental patients who had failed to respond to standard methods of treatment, including tranquilizing drugs. These veterans were extremely withdrawn, detached from their environment, and uncommunicative. Some were mute. The device, placed in an eight-foot-wide panel across the alcove of a large room, gives the appearance of being an extension of the wall. Projecting from the panel are handles, and beneath these are slots opening into trays. Centered above the handles is a screen for projecting slides.

Patients at first are given simple problems of moving the handles in patterns to turn on colored lights in the panel, project slides, or pass objects through the slots. The tasks gradually become more complex, and patients help each other in operating the apparatus. Soon they are able to work in pairs and cooperate with each other to achieve results.

Each of a group of 12 patients received three 20 to 30 minute sessions with the apparatus weekly for 15 weeks at the Battle Creek VA hospital. They also participated in the hospital's usual therapeutic activities, such as occupational and corrective therapy.

Dr. Armitage and Dr. King said definite improvement was noted in the mentally ill veterans. Two who had not spoken for four years began to talk. Soon after beginning to work with the apparatus, one of the long-term mute patients greeted the therapist with, 'Good morning." Others showed an interest in the apparatus and began to ask questions about it.

VA said that while use of this device represents a minor part of the over-all treatment, the apparatus has proved of definite help in getting patients to participate more fully in therapeutic activities.

VA MEDICAL EXHIBITS WIN AWARDS

Four awards were won by the Veterans Administration during 1958 for outstanding medical exhibits displayed at professional meetings throughout the country. In addition, two VA employees were given an award for the best medical illustration in connection with a fifth exhibit.

The exhibit, "Roentgen Diagnosis of Mitral Stenosis," author, Dr. I. Kirsch of the Hines, Ill., VA Hospital, was awarded the American Medical Association's Certificate of Merit, at a meeting in San Francisco in June.

The exhibit, "Better Criteria for Orthopedic Shoe Prescription," author, Dr. C. F. Mueller of VA's Central Office, was awarded the American Podiatry Association's Gold Medal in Washington, D. C., in August.

The exhibit, "A Primer on Radiation Hazards," authors, Drs. Richard E. Peterson and Julius Baron of the Iowa City, Iowa, VA Hospital, was awarded the American Roentgen Ray Society's Certificate of Merit in September.

The exhibit, "Rehabilitation of the Quadreplegic Patient," authors, Drs. A. B. C. Knudson and F. J. Schaffer, VA's Central Office, Washington, D. C., was awarded the Bronze Medal of the Congress of Physical Medicine and Rehabilitation in Philadelphia in May.

In addition, Barbara Allison and Verlin Y. Yamamoto, employed in VA's Medical Illustration Service, Des Moines, Iowa, were awarded a special certificate by the American Medical Association in San Francisco for the "Best Medical Illustration" in connection with the exhibit, "Upper Dorsal Sympathectomy," by Dr. Louis T. Palumbo of the VA Center at Des Moines.

All of the exhibits were designed and produced by the Visual Aids Division in VA's Central Office, Washington, D. C.

CAMERA STUDIES CHARACTERISTICS OF MENTAL PATIENTS

With the aid of the movie camera, a Veterans Administration psychiatrist is compiling an extensive study of human expression. Fleeting changes of face, voice, gait, stance, and gesture of hospitalized mental patients are captured on film by Dr. Erwin W. Straus of the Lexington, Ky., VA hospital, in his search for a better understanding of mental breakdown. Later he analyzes the films by using a special viewer to look at the individual pictures or "frames," or by running the footage in slow-motion.

Many thousands of feet of these films, made during the eight years of Dr. Straus' study, are in laboratory files of the Lexington VA hospital, where he is director of professional education and research. He is hopeful that his studies of expression may lead to a better understanding of mental breakdowns in terms other than those of physiology, and thus contribute to more effective treatment of mental disease.

Dr. Straus considers a patient's outward expressions and movements a reliable index to his mental states, sometimes more so than his words, since it usually is difficult to dissemble one's expressions. He also pointed out that many mental patients are not able to communicate through words at all.

An exhibit picturing Dr. Straus' research has been shown at meetings of the American Psychiatric Association, the American Medical Association, and the Kentucky State Medical Association. In this exhibit, he reinforces his observations with references to works of art that depict mental states or aberrations. Included are reproductions of gestures, expressions, and body movements from pictures by Michelangelo, Rembrandt, Toulouse-Lautrec, and Picasso.

To a trained observer, Dr. Straus said, even the sequential positions of a person's hands may yield a significant narrative. Many of his films show expressions in association with particular histories of mental illness or particular situations. Dr. Straus has coined the term "rheoscopic" to describe the studies, from "scopein," meaning accessible to critical sight, and "rheo," meaning "the fleeting."

A native of Germany, Dr. Straus is a diplomate of the American Board of Psychiatry and Neurology and a staff member of the Department of Psychiatry of the University of Louisville School of Medicine.

VA INCREASES MEDICAL RESEARCH PROGRAM

An expanded research attack on the major medical problems of the nation has been launched by Veterans Administration, with increased research funds appropriated by Congress. About $15 million is available for VA medical research during the fiscal year that began July 1, 1958—$5 million more than was available for that purpose last year.

Large-scale VA research programs in aging, mental illness, cancer, heart and blood vessel disorders, and tuberculosis will be conducted during the current fiscal year. In addition, some 50 VA hospitals that are equipped for use of radioisotopes will have programs to develop new techniques of atomic medicine for diagnosis and treatment.

The major new emphasis in the agency's research will be on studies of mental and physical deterioration associated with aging, Dr. Martin M. Cummings, director of the VA research service in Washington, D.C., said.

These are to include investigation of the social and psychological aspects of aging (at the VA centers in Bath, N.Y., and Kecoughtan, Va.); of changes in the elastic or connective tissue of the body with aging and of the biochemistry of aging (at the VA center in Martinsburg, West Va., and the Pittsburgh, Pa., VA general medical and surgical hospital); and of hearing loss in aging (at the VA West Side Hospital in Chicago).

Also studies of gastrointestinal function (at the Manhaftan VA Hospital in New York City, using the radio pill developed there as a research tool; of brain function in relation to hormones and use of drugs, including tranquilizers, in the aged (at the Martinsburg, West Va., VA center); of the role of diet in aging and of hormones in relation to heart attacks and strokes (at the Los Angeles VA center); and dental research on changes in the jaw with aging (at the Wadsworth, Kans., VA center).

About $500,000 has been allotted for studies of this sort in VA hospitals and clinics during fiscal year 1959. Dr. Charles C. Chapple, who heads the agency's new division for research in aging, said prevention of the disabilities of aging, through diet and other means, will be stressed.

"This new research will involve work in understanding the physical, psychological and social aspects of aging, from the molecule, to the cell, to tissue, to organ, and to the individual as a whole and his relationships to others," Dr. Chapple said.

The $1.9 million allocated to VA research in neuropsychiatric disorders during the current fiscal year will enable the agency to expand its research on the newer drugs in psychiatry, on the chemistry of mental illness, and in the psychological and behavioral science fields.

Nearly $1 million in VA funds are to be used for cancer research during the year, including large-scale chemotherapeutic studies in cooperation with the National Cancer Institute and individual studies by VA investigators. The large VA cooperative research projects begun last year on hardening of the arteries, strokes, and heart attacks will be expanded, and many of the individual research projects in the agency's hospitals and outpatient clinics will be in this field.

VA's major research program in tuberculosis and other lung disorders, including studies of newer drugs in cooperation with the Armed Forces, also will be sustained during fiscal 1959.

Dr. Cummings said VA plans to use the multi-hospital cooperative study technique for research in a variety of medical and surgical fields. Research funds are available to continue the 21 cooperative studies now underway in the agency's hospitals and to begin nine new studies on similar scales and using similar procedures in fiscal 1959, he said.

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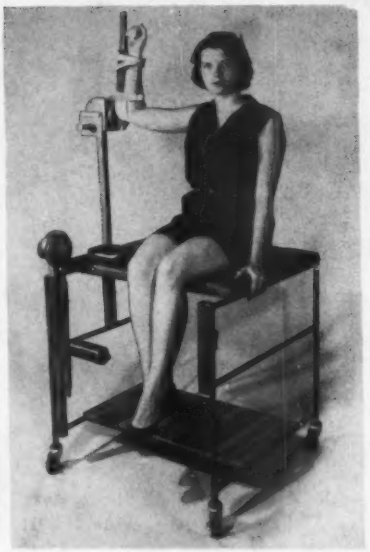

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